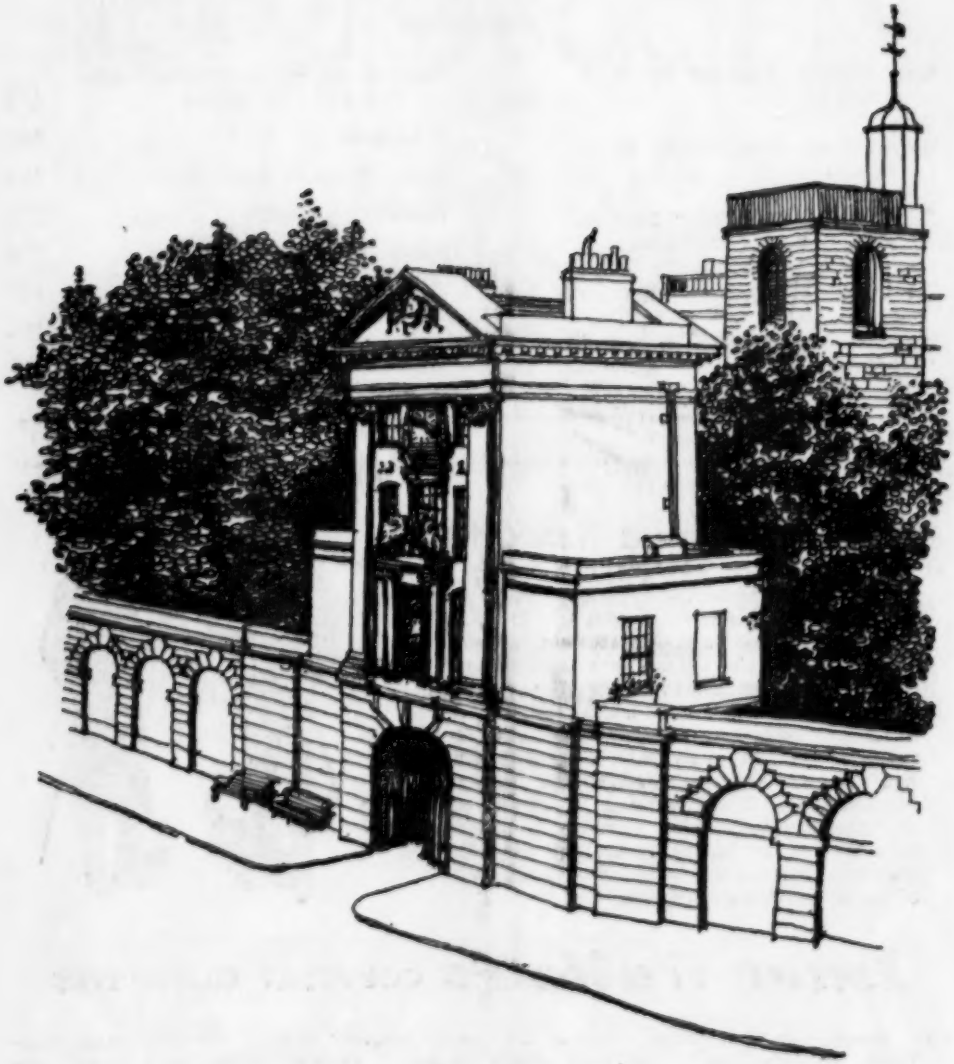
ST. BARTHOLOMEW'S HOSPITAL JOURNAL



VOL LIX MAY 1955 No 5

ST. BARTHOLOMEW'S HOSPITAL JOURNAL

Editor: A. J. SALSBURY
Assistant Editor: G. R. KINROSS WRIGHT
Women's Representative: Miss N. COLTART

Manager: DOUGLAS CHAMBERLAIN
Assistant Manager: L. J. CHALSTREY
Charterhouse Representative: P. NORRIS

May, 1955

CONTENTS

More Popular Fallacies by P. F. Lucas 134

An Abnormal First Rib by M. A. Newton 140

The Best Laid Schemes o' Mice an' Men by Ronald McGrigor ... 142

The Simple Life by J. D. Parker ... 146

The British Students Tuberculosis Foundation 147

The Life and Works of Louis Pasteur Part I by J. S. Malpas 150

So to Speak 159

Recent Papers by Bart's Men 160

Examination Results 163

Rahere Choir 164

Births, Deaths and Marriages 165

Sport 166

Book Reviews 170

Grave News from Mafeking

These fashion plates of ours are from an advertisement of nearly 60 years ago. In those days we were just beginning to build up our reputation for value for money which has been the basis of our business ever since. Maybe these fashions and the events which seemed so portentous half a century ago are laughable today. Yet the principle of good value abides, and we have built a moderately big private business on it. If old fashioned standards of craftsmanship and quality materials combined with present day styling in the best of taste appeal to you, you may well find we're the kind of people you like to deal with.

Isaac Walton's COMPLEAT OUTFITTERS

City Branch and Head Office, London and Home Counties Area: LUDGATE HILL, E.C.4
WATFORD, 77 High Street. BROMLEY, Market Square. PALMERS GREEN, 363-5 Green Lanes
NEWCASTLE, Grainger Street, YORK, Lendal House, Lendal.

MEDICAL SICKNESS SOCIETY

The ABC of PENSONAL INSURANCE

–or how to provide yourself with a complete scheme of personal cover in one policy at reduced rates with the

MEDICAL SICKNESS, ANNUITY & LIFE ASSURANCE SOCIETY LIMITED

3 CAVENDISH SQUARE, LONDON, W.1.

Telephone: LANham 2991 (3 lines) and 6496 (2 lines)

Please write for particulars, mentioning this advertisement

When you are BUYING A CAR ask for details of the HIRE PURCHASE SCHEME of the MEDICAL SICKNESS FINANCE CORPORATION LTD.

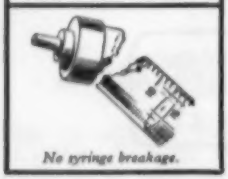
THIS MODERN INJECTION TECHNIQUE

saves time and money

'Viules' reduce sterilization procedures to a minimum.

Does away with ampoule-filing.

With 'Viules' there is no transfer of solution to syringe.



No syringe breakage.

'VIULES' contain pre-measured doses of stable, sterile injections ready for immediate use in any suitable cartridge syringe. They offer simplicity, speed, efficiency, accuracy and economy in every branch of medicine.

Among the drugs now available are the following, in a range of convenient doses :—

ADRENALINE · ATROPINE · BISMUTH OXYCHLORIDE · DIAMORPHINE · ERGOMETRINE · HYOSCINE LIVER EXTRACT · LOBELINE · METHADONE · MORPHINE · MORPHINE & ATROPINE · NIKETHAMIDE PAPAVERETUM & SCOPOLAMINE · PETHIDINE · PHENOBARBITONE SODIUM · PROCAINE & ADRENALINE PROGESTERONE · PROCAINE PENICILLIN Aqueous and Oily Suspension · STREPTOMYCIN TESTOSTERONE · VITAMIN B12

'VIULES'

single-dose injections in disposable cartridges

Full details will be gladly sent on request

The Medical Department

BOOTS PURE DRUG COMPANY LIMITED NOTTINGHAM

Boots

S.213

Fourfold Control

in Peptic Ulcer and Hyperchlorhydria

HCl Secretion
Neutralization
Gastric Spasm
Sensory Anaesthesia

ALOCOL COMPOUND is a new preparation formularized to provide comprehensive management of causal and symptomatic disturbances in the treatment of hyperchlorhydria and its manifestations, including gastric and duodenal ulcer.

Formula each Tablet		*ALOCOL COMPOUND tablets effect*
'Alocol'(Coll. Alumin. Hydroxide)	1.58 gr	antacid protection
Ext. Belladon. Sicc. B.P.	0.075 gr	diminished secretion
Papaverine Hydrochlor. B.P.	.31 gr	reduced motility
Benzocaine B.P.	0.31 gr	sensory anaesthesia

Alocol Compound thus provides the advantage of fourfold control—reduction of causal hyperacidic flow, and its neutralization; alleviation of symptomatic hypermotiliity and pain.

Packs and Prices to Pharmacists:

Bottle of 50,
2/11d. *plus* 9d. P.T.

Bottle of 250,
12/6d. *plus* 3/1½d. P.T.;

Bottle of 500,
23/9d. *plus* 5/11½d. P.T.

M.388

ALOCOL *Compound*

Professional sample on request from Medical Dept.

A. WANDER LIMITED, 42 UPPER GROSVENOR STREET, LONDON W.1.

PERMISSIBLE ON N.H.S. SCRIPTS

Relieving the bronchial tree in asthma

'ASMAC TABLETS are formularized to provide symptomatic relief of the bronchial tree both during actual dyspnoeic attacks of bronchial asthma, and during remissions.

'Asmac' Tablets combine in a single prescription 'official' drugs recognized for their reliability to effect mental sedation, decongestion, expectoration and bronchodilatation.

Packs and Cost to Pharmacists:
Standard Tube of 20: 3/-
Dispensing Bottles:
100, 12/-; 500, 52/6;
1,000, 102/6.

M.372

Asmac

WANDER

Formula (each Tablet):—

Allobarbitone B.P.C.	0·03 g. (0·46 grains)
Liquid extract of Ipecacuanha B.P.	0.02 ml (0.3 minim)
Ephedrine Hydrochloride B.P.	0·015 g. (0·23 grain)
Caffeine B.P.	0·10 g. (1·54 grains)
Theophylline with Ethylenediamine B.P.	0·15 g. (2·31 grains)

P1. S. 54. *Permissible on N.H.S. scripts*

A. WANDER LTD.,
42 Upper Grosvenor Street,
London W.1

Antihistamines for old and young

When the contents of Pandora's Box were released, Hope alone remained. To the patient of allergic diathesis, threatened by a veritable Pandora's Box of ills, the antihistamines 'Histantin' and 'Actidil' represent far more than hope.

For adults 'Histantin' is the product of choice, giving prolonged relief with a minimum of side-effects.

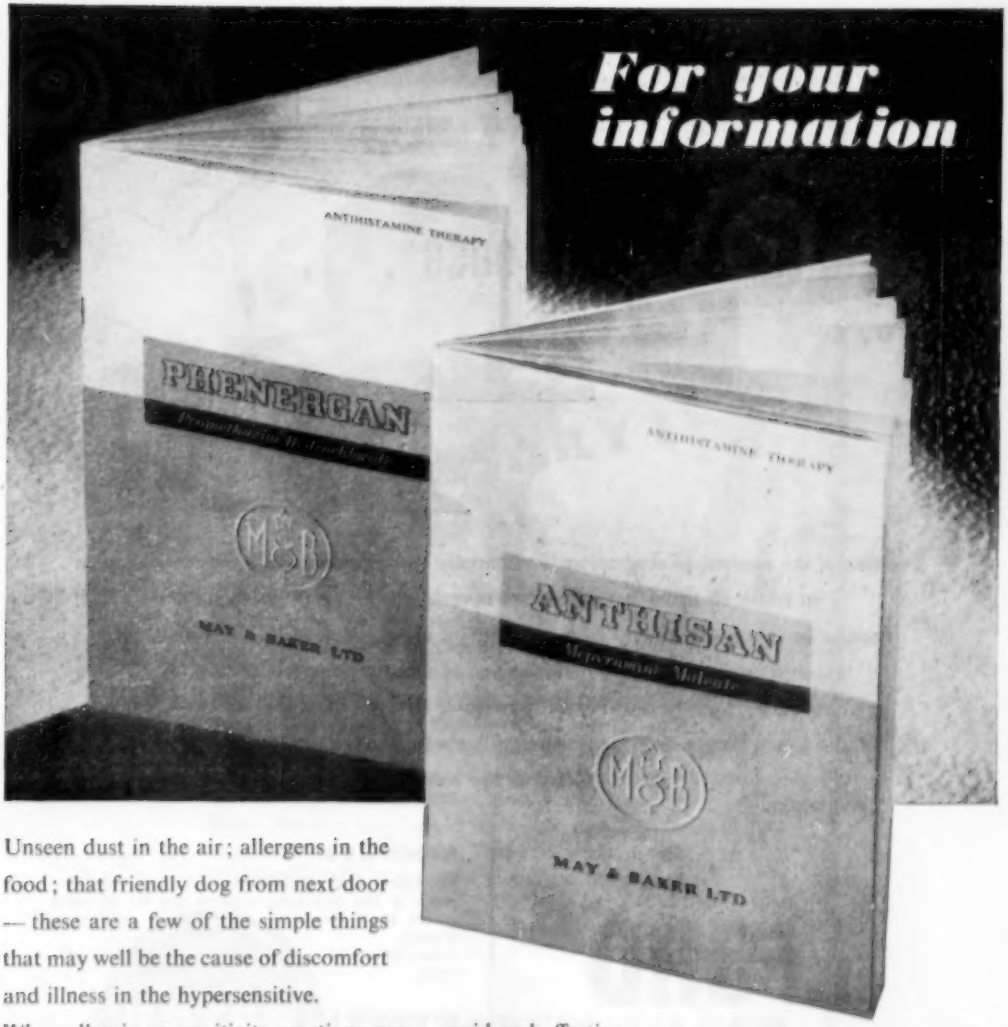
The new quick-acting antihistamine, 'Actidil', exerts its effect for about 12 hours and is also notable for low incidence of side-effects. 'Actidil' Elixir has been specially formulated and clinically tried for the treatment of allergic conditions in children.

'HISTANTIN', *50 mgm., is issued in bottles of 25, 100 and 500 at list prices (subject to usual discount) of 6/6, 24/6 and 110/-.*

'ACTIDIL' *compressed products of 2·5 mgm. in bottles of 25 and 500 at list prices (subject) of 6/6 and 110/-.*

'ACTIDIL' ELIXIR *in bottles of 20 fluid ounces, for dispensing, at a list price (subject) of 15/-.*

BURROUGHS WELLCOME & CO. *(The Wellcome Foundation Ltd.)* **LONDON**



Unseen dust in the air; allergens in the food; that friendly dog from next door — these are a few of the simple things that may well be the cause of discomfort and illness in the hypersensitive.

When allergic or sensitivity reactions occur, rapid and effective symptomatic relief can be obtained with one of the M&B brand antihistaminics. Copies of booklets, summarizing useful information on these products, are available and will gladly be sent on request to our Medical Information Division. When writing, please give particulars of your medical school and status, i.e., whether clinical or pre-clinical.

M&B brand
MEDICAL PRODUCTS

MANUFACTURED BY
MAY & BAKER LTD

MA2339

DISTRIBUTORS: PHARMACEUTICAL SPECIALITIES (MAY & BAKER) LTD · DAGENHAM · ESSEX
Tel. ILFord 3060 Ext. 99 or 100

the details of the case . . .

The task of the medical photographer is essentially that of producing permanent records in which all significant details are revealed with clarity and fidelity. Because he is concerned with an almost infinite variety of subjects and conditions, success depends as much on his choice of sensitised materials as on his personal ability. From the very wide range of ILFORD films and plates, of which three examples are described below, it is always possible to select a material exactly suited to the work in hand.

ILFORD

FILMS AND PLATES for MEDICAL PHOTOGRAPHY

ILFORD H P 3

Extremely fast panchromatic—recommended for work in the operating theatre and for all cases where short exposures are essential or lighting is poor.
Available as plates, flat films, roll films and 35 mm. films.

ILFORD F P 3

Medium-speed panchromatic with very fine grain —suitable for specimen work and general photography.
Available as flat films, roll films and 35 mm. films.

ILFORD SELOCHROME

Fast orthochromatic giving particularly good rendering of flesh tints—specially recommended for the photography of superficial skin diseases.
Available as plates, flat films and roll films.

ILFORD LIMITED · ILFORD · LONDON

The Problem of the Peptic Ulcer Patient

IS HOSPITALISATION NECESSARY?

Clinical evidence on a considerable scale more than warrants the use of Roter tablets in cases of chronic gastric or duodenal ulcer where the alternative appears to be hospitalisation or surgical intervention. Often, the patient experiences dramatic relief from pain without recourse to a restricted way of living or stringent dietary measures. Healing is usually accelerated and relapses are relatively few. Furthermore, Roter contains no narcotics, and has no side-effects. Roter therapy may indeed provide a possible solution to intractable peptic ulcer. Literature and a full trial supply will be sent you gladly on request.

ROTER IN PEPTIC ULCER

Packings: *Tins of 40, 120, 640, and dispensing size, 720 (P.T. Free). Prescribable on N.H.S. form E.C.10*

F.A.I.R. LABORATORIES LIMITED

179 HEATH ROAD, TWICKENHAM, MIDDLESEX

Telephone : POPesgrove 2028

● *FOR MINIMAL TISSUE TRAUMA*

ETHICON EYELESS-NEEDLED SUTURES

MERSUTURES Regd

MEET ALL CURRENT SURGICAL TECHNIQUES

SUTURES guaranteed for extra tensile strength and consistent gauging. Available with catgut, silk, silkworm gut.

NEEDLES are always sharp, retain their shape. Improved flattened area ensures better grip for needle holder. Full range available.

Illustrated Catalogue available on request

ETHICON
Sutures & Ligatures

ETHICON SUTURE LABORATORIES LIMITED, BANKHEAD AVENUE EDINBURGH

A NEW ORGANON PRODUCT GIVING

Tranquility without sedation

Quiescin RESERPINE-ORGANON

QUIESCIN, an alkaloid of Rauwolfia serpentina, is of the greatest clinical value in the treatment of anxiety and tension states. Quiescin gives a feeling of relaxation and comfort, banishes depression, and lowers raised blood pressure.

INDICATIONS

Anxiety states
Mental illness
Hypertension

Quiescin

★ does not produce the mental dullness or addiction associated with barbiturates.
★ wide margin between therapeutic and toxic dosage.
★ no lowering of blood pressure in normotensives.
★ only mild, infrequent side-effects encountered.

DOSAGE
For mental illness and/or hypertension ½—3 mg. per day in divided doses as required. In anxiety states up to 1 mg. per day as necessary.

AVAILABILITY Tablets of 0.1, 0.25 and 1 mg. in bottles of 25, 100 and 500.

Literature and clinical sample on request

ORGANON LABORATORIES LTD.
BRETTENHAM HOUSE · LANCASTER PLACE · LONDON · W.C.2
Telephone : TEMple Bar 6785/6/7, 0251/2 Telegrams : Menformon, Rand, London

the problem of packing the goaf

Dicuss economic aspects of this. Discuss facial sutures in trilobites. Give an account of Klein's representation of the lines of S_4 and the points of S_8. Compare the significance of the avamatic works of Hauptmann and those of Brecht. Explain the marginal productivity theory of Wages. Characterise the art of Caravaggio.

You can't know everything

but it helps if you read **THE OBSERVER** every Sunday

Lovely day for a GUINNESS

TURNED OUT NICE AGAIN — that's what you'll say when you reach for that creamy Guinness. There's goodness in every drop. Refreshment in every glass. Life will seem brighter and you will feel fitter after Guinness. *No time like now to enjoy one.*

G.E.2514.A

HAMBLINS "G.P." OPHTHALMOSCOPE

An AMENDMENT and IMPROVEMENT of the LISTER-LORING OPHTHALMO-SCOPE

The well known Lister-Loring Ophthalmoscope has been improved somewhat as shown in the accompanying illustration and is now known as the "G.P." Ophthalmoscope. It is provided with a 'knurled' handle similar to that of the Lister-Morton Ophthalmoscope and the quick thread head and cap (both associated with the higher priced instrument) have been ¡ncorporated. It has been further improved by a modificaiion of the face plate which allows for easier adjustment of the sight hole. The "Loring" wheel of 23 lenses remains. This is in itself a simplification resulting in a material lowering of price.

THEODORE HAMBLIN LTD
DISPENSING OPTICIANS
15 WIGMORE STREET
LONDON W.1.

If you are a trained nurse, dedicate your service to the soldiers of the Queen. In return you will know adventure, travel, and the prestige of a commission. There is unlimited scope in Q.A.R.A.N.C. for advancement in many spheres in the profession, as well as to higher rank in the corps itself. Your service may take you to Singapore, Malaya, Hong Kong, Japan, Africa, Gibraltar, Bermuda, Malta, Jamaica, Germany, Austria, or on troopships. Write to the address below for full details of the opportunities that await you.

in every corner of the world . . .

in QARANC

QUEEN ALEXANDRA'S ROYAL ARMY NURSING CORPS

MARTON-IN-CHEIF, WAR OFFICE
(AMD4 IQ1301/1), LONDON, W.1.

THE MEDICAL DEFENCE UNION Ltd.

INCORPORATED 1885 *Registered Office* Telephone EUSton 4244

TAVISTOCK HOUSE SOUTH, TAVISTOCK SQUARE, LONDON, W.C.1.

Secretary: ROBERT FORBES, M.B., Ch.B.

IMMEDIATELY AFTER QUALIFICATION, YOU should take steps to apply for membership of The Medical Defence Union to secure protection against legal actions arising out of the pursuit of your profession.
Every Medical and Dental practitioner, from the humblest to the most distinguished, requires the protection of a defence organization. Membership is a Guarantee of Security.

THE INDEMNITY afforded to members in respect of a case undertaken by The Union is an invaluable feature in view of the large damages and costs that can result from an adverse verdict.

PROTECTION is also provided on special terms to Medical and Dental practitioners resident and practising overseas.

ENTRANCE FEE 10s. ANNUAL SUBSCRIPTION £1 for each of the first three years for newly qualified entrants, **£2** each year for members of more than three years standing. (No entrance fee payable by candidates for election within one year of registration with General Medical Council or the Dental Board.)

MEMBERSHIP EXCEEDS 41,000

Forms of application for membership obtainable from the Secretary.

Banking hospitality

For the convenience of Hospital staff and students there is an office of National Provincial Bank adjacent to the Hospital's wages and salaries office. You will find it a pleasure to bank with the National Provincial. The helpful personal service and quiet efficiency of this friendly bank is something you will appreciate in your day to day dealings.

Hours of Business
Mondays to Fridays 10-3
Saturdays 9.30-11.30

This office is under the management of Mr. F. H. J. Mead of West Smithfield Branch, 59 West Smithfield, E.C.1, who will welcome enquiries.

National Provincial Bank *where good fortunes grow*

ST. BARTHOLOMEW'S HOSPITAL JOURNAL

Vol. LIX MAY 1955 No. 5

THE NEW REFECTORY

SINCE the beginning of January, the refectory has been closed whilst extensive renovations were carried out. This has resulted in some inconvenience to students, and in a previous editorial some worthy eating places around Bart's were suggested, but anyone who has seen the new refectory will agree that the end product amply justifies the trouble. The actual work occupied twelve weeks, the decorating of the entrance taking a short additional time, and the refectory was officially opened by Professor Christie on April 12.

The refectory has now been completely transformed from its former dark and gloomy appearance. By the judicious use of lighter colours in redecoration, and skilful reorganisation of the furniture, it is now bright and spacious, although the window space has not been altered. The colour scheme was selected by Miss Smith, of the College Office, and shows excellent taste.

The floor consists of one foot squares of red and beige tiled linoleum. The old hexagonal pillars have been cut down as much as possible, and are now square in shape and grey in colour. Three of the walls are painted in Victoria Grey, but the wall furthest from the entrance is very effectively painted in a Salting Green, with fleur de lys motif. As one enters the refectory, this wall stands out in a most attractive manner. It was regretted that the Bart's crest could not be used as the motif on this wall, but it was felt that black and white would not harmonise with the other colours. The roof has been lined with acoustic panels painted white, and the diminution in noise due to this is remarkable. The occasional crash of falling crockery in the kitchen is now scarcely audible from the far end of the room. The windows are now flanked by green curtains of contemporary design. To remove the familiar refectory odour, a Ventaxia air extraction unit has been installed above the servery, and this had been screened by Reedlight glass, with primrose vitrolite enamelling.

The furniture has been entirely replaced. The tables are in light oak, and are Formica topped. They seat four to six people. The shelves under the tables have been so designed that it is almost impossible to place a tray in them. Small tables are provided at intervals on which trays should be stacked. It is hoped that this will considerably speed clearance by the waitresses. The chairs are also of light oak, with red seats. As a result of rearrangement, the seating capacity has been increased from 112 to 125. Shortly, three tables will be introduced at which it will be possible for anyone to have individual service for a fee of sixpence.

A sink will be installed by one wall, so that students can obtain their own supply of water. The lighting has now been changed to alternating current and tungsten bulbs installed. This has also helped to brighten the refectory considerably. It was felt that

fluorescent lighting tended to give the food a sickly colour, and that this might be attributed to the cooking by uninitiated consumers! All crockery, cutlery, and glassware have been replaced. The salt cellars and pepper pots are also new. Plastic trays have been introduced, and these cut down noise considerably.

The entire renovation has come to a considerable sum. The redecorations cost about £4,000, the acoustic ceiling alone amounting to £500. In addition, the new furnishings cost £1,150 and the china and cutlery £500.

To meet this, the Hospital is making a substantial contribution. The Medical College, which has been conscious of the need to re-equip the refectory for several years, has been setting aside the necessary funds. The share capital of the now defunct Catering Company has also been utilised.

Students have been asked to co-operate as much as possible in keeping the refectory in its present unspoilt state. It would be appreciated if there were no smoking whilst obtaining food. The racks under the tables should be used only for books, and not for dirty plates. Finally, as cuspidors are not provided, please do not spit on the floor!

It is hoped to maintain the standard of the food, and, if turnover is eventually great enough, to lower its price. It seems a pity, that a more ambitious menu is not produced, but one supposes that this would lead to an impossible raising of prices. Still, one cannot but feel somewhat envious of the daily menu of a man admitted to this Hospital for cholera, as quoted in the *Journal* for November, 1893:—

September 16.—Breakfast, bloater; Midday, whelks; Tea, eggs and bacon; Supper, ——. September 17—Breakfast, eggs and bacon; Midday, hot roast pickled pork, Tea, winkles; Supper, cold pork and greens.

It is indeed sad that the robust diet of earlier times has been replaced by a sober admixture of carbohydrates in a supposedly progressive community.

The New Refectory

Professor Christie opens the Refectory

Before . . .

. . . and After

LETTERS TO THE EDITOR

The British Student Tuberculosis Foundation

Dear Sir,

We should like to draw the attention of all Barts students, past and present, to an appeal sponsored by the Council of the Barts Students Union on behalf of the British Student Tuberculosis Foundation. A short account of the work of the Foundation appears on another page of this issue.

In 1950 an appeal was made for funds for the purchase, conversion and equipping of a permanent centre for students convalescing from tuberculosis. As a result the Foundation now has a capital of £26,000 for this purpose and it is hoped that negotiations will soon be completed for the purchase of Mottingham Hall in the grounds of Grove Park Sanatorium.

Last year expenditure was met by income from donations and interest on capital, but it is estimated that in the present financial year the Foundation will have a deficit of over £500, largely due to the establishing of the centre for women students at High Wood, and such a deficit could only be met by drawing from the capital reserved for the main centre.

This is the first appeal sponsored by the Bart's Students Union to aid the Tuberculosis Foundation and we hope at least to equal the amount raised by other London Medical schools; the record is at present held by the London Hospital with a total of £391.

It is intended to have a collection on Thursday and Friday, May 12 and 13, 1955, in the refectories and other student premises in the Hospital and at Charterhouse. It is also intended to organise a raffle, the draw to take place at the Student Union Ball at the Royal Festival Hall on Friday, May 13, 1955.

In addition the Financial Secretary would be very pleased to receive donations sent direct to him and for this purpose a subscription form is enclosed in this issue of the *Journal*. All donations, large or small, will be gratefully received and acknowledged.

We hope this appeal will receive the sympathetic support of all students.

Yours sincerely,

A. J. E. CAVE, Pres., Bart's Students Union
JOHN NICHOLSON, Senior Secretary.

MORE POPULAR FALLACIES

by **P. F. LUCAS**

The comments which followed publication of my first collection of Popular Fallacies (*St. Bartholomew's Hospital Journal*, 1953) suggested that they had at least supplied grist to some mental mills. This paper is an attempt to explain a further series some of which were brought to me by students to whom I am duly grateful.

Cardiac Oedema : It used to be taught that cardiac oedema results from a combination of increased hydrostatic pressure and capillary damage from anoxia. It has now been shown that it results from salt and water retention (Brod and Fejfar 1950). In cardiac failure the renal blood flow, and consequently the glomerular filtration rate, falls so that more salt than normal is absorbed in the tubules. The sodium accumulates in the extracellular fluid and takes water with it to maintain osmotic relations. Digitalis causes diuresis by increasing cardiac output and thus renal blood flow, mersalyl by interfering with tubular absorption of sodium. It is thus clear why these drugs are more effective in cardiac than in other types of oedema.

Digitalis and auricular fibrillation : The dramatic effects of digitalis on the circulation of patients with auricular fibrillation leads many to assume that it has some effect on the fibrillation itself. The fibrillation, so far from being cured by digitalis, is perpetuated by it as a result of shortening of the refractory period. The electrocardiogram shows the auricular " f " waves identical before and after digitalis. Digitalis induces a partial block in the conducting tissues so that the ventricle responds to fewer of the impulses with which it is bombarded; the ventricular rate then slows, allowing a longer diastolic pause, better filling and higher output. The only drugs capable of correcting the underlying disorder of rhythm are those of the quinidine group.

High output failure and digitalis : In cardiac failure the cardiac output is usually low. There is a group of states in which the output increases as a compensatory mechanism—either by tachycardia, or by raised venous pressure through Starling's law—because the myocardium itself is healthy. Chief amongst these are chronic cor pulmonale and the heart failures of anaemia, thyrotoxicosis, fever and arteriovenous aneurysm. Clinically, there are peripheral vasodilation with warm extremities, collapsing pulse and capillary pulsation. If the compensatory mechanism breaks down, frank congestive failure occurs and the output falls, although it may remain higher than normal (see Friedberg 1949). Digitalis has little effect upon the output of normal hearts, and may similarly fail in " high output " states. It is however always wise to try its effect in congestive failure of whatever type.

Diagnosis of aortic stenosis : Recent research has shown that aortic stenosis is commoner than was thought, although students will do well to remember that the first thing to say about a murmur at the aortic base is that this is not a case of aortic stenosis (Horder 1921). Autopsy studies show that it occurs, not uncommonly, without the classical physical signs (Parkinson 1949). A systolic murmur, usually loud, long and harsh, and left ventricular hypertrophy are essential for the diagnosis; an aortic systolic thrill will be felt in many cases if the patient leans well forward and exhales; a soft aortic second sound, pulsus tardus and low pulse pressure occur. The murmur may be maximal at the apex. Prognosis is good until symptoms occur; a rapidly downhill course to death within two years is then usual (see Lewes, 1951).

Prognosis of subacute bacterial endocarditis : The use of penicillin has so altered the prognosis of this universally fatal disease that there is a tendency to assume the sequence diagnosis-treatment-cure. The mortality in the first six months after diagnosis is still in the region of 45%, and thereafter about 4% per year (Cates and Christie 1951). This is partly a result of damage to vital organs before treatment is started, particularly heart and kidneys, by multiple small emboli; partly of fatal major emboli—renal, cerebral, cardiac and mesenteric; and partly because the organism may be resistant to penicillin, other chemotherapy being much less effective in eradicating the infection.

Venesection in polycythaemia : Blood loss is the most powerful stimulus known for red

blood cell formation. It seems illogical thus to treat a disorder of which the main feature is excessive red cell formation. The benefit conferred is at best temporary. Repeated venesection results in increasing hypochromia of more and more red cells, until symptoms of anæmia occur at a red cell count of 10 millions per cmm. The logical treatment is to prevent red cell formation with radio-active phosphorus, perhaps combined with initial venesection to procure immediate relief (see Scott 1953).

Iron absorption and achlorhydria: The absence of acid from the gastric juice provides a facile explanation of hypochromic anæmia. There seems to be no doubt that the presence of hydrochloric acid assists the absorption of iron, but it is much less certain that a clear cause and effect relationship exists between achlorhydria and iron deficiency. Achlorhydria is constantly present in Addisonian anæmia, is common in certain other disorders and may occur as a congenital abnormality, yet iron deficiency is by no means invariable in these conditions. It is as common in men as in women and is common in old age; iron deficiency is rare in men and relatively uncommon in old age. These facts suggest that achlorhydria is never more than a contributory factor in iron deficiency and its discovery must not distract attention from more important causes.

Mediastinal shift: It is commonly stated that pleural effusion or collapse cannot be present because the mediastinum is central. The mediastinum is liable to become fixed by adhesions, particularly in older people who have suffered much pulmonary infection, and in such circumstances large effusions or areas of collapse may fail to shift it. This is much less common in children in whom the mediastinum is free. Mediastinal shift is a most valuable indication of the nature of pulmonary and pleural lesions, but its absence, particularly after middle age, must not weigh heavily in diagnosis.

Signs of collapse and fibrosis: There are two explanations for the confusion over these signs. One is that the signs vary from base to apex, the other that they depend on the degree of tracheal displacement. Bronchial breath sounds are heard over the normal trachea. If the trachea is displaced by collapse or fibrosis of the upper lobe, bronchial breath sounds are heard over the lesion. In addition, since the lung is of relatively homogeneous consistency from collapse or fibrosis, it will conduct the tracheal, or bronchial, breath sounds over a still wider area. It is clear that these conditions do not obtain at the base; bronchial breathing is thus less common over basal collapse or fibrosis. The importance of localised wheezing, rhonchi and quietness of breath sounds in diagnosis of bronchial obstruction, have recently been stressed (Johnston et al. 1954).

Inhaled foreign body: Enquiry for this potent cause of bronchiectasis and lung abscess is all too often limited to asking if the patient has "inhaled anything." It has been shown that material may be inhaled into the lungs without the patient being aware of it, but enquiry for choking attacks may be fruitful. Glennie et al. (1952) reported recovery of long-forgotten foreign bodies inhaled as many as 14 years previously. Aspiration is particularly liable to occur during sleep, coma or anæsthesia, especially if there is infection in the upper respiratory tract, and is an ever-present danger when there is oesophageal obstruction.

Tubercle bacilli in sputum: The importance of early diagnosis of tuberculosis increases with advances in treatment. If plenty of sputum is being raised and thorough examination of three early morning smears show no acid-fast bacilli, it is unlikely that pulmonary tuberculosis is present; this is especially so if there is a cavity with a fluid level, abscess or neoplasm is more likely. In any event repeated direct smears are of little value. 24-hour specimens should then be collected for smear and culture after dissolving of mucus and centrifuging. Culture remains the most effective method, its only disadvantage being a delay of 4-6 weeks. If there is no sputum being raised, direct smears and culture of laryngeal swabs, or culture and guinea-pig inoculation of early morning gastric lavage, are equally effective. With modern techniques culture on Loewenstein-Jensen medium is reckoned as effective and at least as rapid as the much more expensive and troublesome guinea-pig inoculation.

Pleurisy: Pleurisy is no more a diagnosis than are peritonitis, pericarditis or sciatica. It is most often a result of spread of intrapulmonary disease to affect the pleura, but the pleura may be primarily affected without evidence of parenchymatous lung disease. This primary pleurisy may remain dry—a

short, sharp illness with recovery in a few days—or fluid may form; very rarely primary empyema may occur from blood stream infection. The probability of a tuberculous aetiology increases greatly if fluid forms. The popular fallacy in this respect is " No demonstrable lung disease—no tuberculosis." The tuberculous aetiology is based on the frequency with which tubercle bacilli can be found in the fluid if careful search is made (about 60%), the commonness of frank pulmonary tuberculosis (at least 25%) within 5 years, of recent exposure to infection, of Mantoux conversion, and of demonstration of subpleural tubercles in some of the few autopsies carried out. The majority of these cases do not have productive cough, haemoptysis or tubercle bacilli in the sputum, the condition arising as a result of allergy to the primary infection or of small subpleural foci. Many of these patients recover completely, especially those that remain dry, but the only safe policy is a five-year radiological follow-up (see Nicholson 1953).

Distinction between pulmonary embolism and infarction : The fallacy that pulmonary infarction is commoner in " surgical " than " medical " patients results from failure to distinguish infarction and embolism. Pulmonary embolism is a condition in which an embolus from the systemic venous system, usually the leg veins, lodges in the pulmonary circulation. If the embolus is small, it will lodge in a peripheral pulmonary vessel resulting in infarction—this situation is commoner in " medical " patients. If the embolus is large, it may obstruct a main pulmonary vessel resulting in such a degree of shock and acute cor pulmonale that death follows before infarction occurs—this is the classical pulmonary embolism which occurs on the 12th-14th post-operative or post-partum day. Pulmonary infarction is often less dramatic than the classical major embolus but it remains a highly dangerous condition—a small infarct may be the harbinger of a large embolus, multiple small infarcts result in acute cor pulmonale, and severe repeated haemoptysis, pleural effusion and infection may occur.

Carcinoma of the stomach and achlorhydria : It is often stated that the presence of acid in the gastric juice is incompatible with a diagnosis of gastric carcinoma. Achlorhydria is a late and inconstant finding in this disease. Swynnerton and Truelove (1952) found normal or excessive acid secretion in 26% of 183 cases.

Mortality of haematemesis and melaena : It is a curious fallacy to regard the latter as less serious than the former. The mortality is as nearly identical as might be expected from their common causes (Thompson et al. 1946, Jones 1947). It may be fair to say that the larger the haemorrhage the more likely is haematemesis to occur and that the drama of haematemesis may occasion more shock. But occult melaena may soon become dangerous haematemesis and the very absence of a dramatic episode may delay diagnosis and treatment. Patients may bleed to haemoglobin of 30% quite rapidly without haematemesis, even from the oesophagus.

Dietary restriction during tests for occult blood in stools : This test finds its most useful place in the investigation of hypochromic anaemia and of obscure abdominal pain. It is positive in about 90% of intestinal neoplasms (Dahl-Iversen and Nissen 1930) and a persistently positive result in the absence of obvious cause is regarded by many as an indication for laparotomy (Hughes 1952). Simple modifications of the sensitive benzidine test have been designed which make it unnecessary to stop iron administration or to insist on the unpalatable " white diet," but which are sufficiently accurate for clinical purposes provided that three specimens are examined (Hughes 1952, Needham and Simpson 1952).

Collateral circulation in portal obstruction : Students suffer a fascination for the caput medusae only slightly less fatal than that of the ancient Greeks. Concentration on this rare form of collateral circulation only distracts attention from the much more common dilated superficial veins passing up the abdominal wall which are second in importance only to oesophageal varices as a sign of raised portal pressure. Contrary to popular opinion, rectal piles are so inconstant a feature of raised portal pressure and so common without it that they are valueless in its diagnosis.

Albumin/Globulin ratio : This ratio must be condemned on the same ground as is expression of the differential white blood cell count in percentages. The proportion of albumin to globulin matters no more than the proportion of neutrophils to lymphocytes.

Such expressions serve only to distract attention from the important absolute figures. An A/G ratio of 1/1 may mean normal albumin with high globulin, or low albumin with normal globulin.

Van den Bergh's reaction in the differential diagnosis of jaundice: Clinical experience has shown that the differential Van den Bergh reaction is valueless in the distinction of hepatic from obstructive jaundice. The reason is that in hepatitis the bile canaliculi swell and produce, in effect, intrahepatic obstruction. It is true that in haemolytic jaundice the bilirubin in the blood is of "indirect" type, i.e., the colour is obtained with the diazo reagent only after the protein has been precipitated, but we must be poor clinicians to depend on this for diagnosis of haemolytic jaundice. The total serum bilirubin may be used to spot sub-clinical jaundice or to follow the progress of a jaundiced patient. At least it has not been suggested that "direct" and "indirect" bilirubin be expressed as a ratio.

Tests of liver function: It is still not clearly understood that the commonly used tests for liver function are not tests of liver function at all but indications of abnormalities of plasma globulin. Such abnormalities are common in hepatic damage but are not specific and the tests may be found positive in other disorders in which globulin changes occur. Their value is that they may be abnormal when direct measurement of globulin is normal. The brom-sulph-thalein excretion test does not come into this category. The measurement of alkaline phosphatase is only a test of liver function in so far as the capacity to excrete bile is concerned. Values higher than 35 KA units per 100ml. suggest extrahepatic obstruction, but the test is of little value as a test of liver function in the absence of jaundice.

Too many "Fs": The description of sufferers from gall-bladder disease as fair, fat, fertile, flatulent, female and forty is guaranteed to raise a laugh from every generation of medical students, and like much humorously acquired knowledge it tends to stick. Unfortunately, it seems that as many as 40% of sufferers may be male (Waugh and Cain 1954), as many as 30% may occur under the age of forty (Griffin and Smith 1954) and that pregnancy has little influence on its incidence (Gross 1929); also that the oft-repeated "flatulent dyspepsia" is of little value in diagnosis (Littler and Ellis 1952). However, most sufferers are overweight.

Renal lesions in shock: The arterial pressure required to form the glomerular filtrate is in the region of 60 mm mercury. If the systolic pressure falls below this level, the formation of urine will cease for purely mechanical reasons. This is a common state of affairs, particularly in haemorrhagic shock. Restoration of blood volume is an urgent matter and will restore urine flow in most cases. If the blood volume is not promptly restored, the renal tubular epithelium may undergo necrosis (acute tubular, or lower nephron, necrosis or nephrosis) by a mechanism not entirely understood but probably from anoxia. In this much more serious situation urine flow cannot recommence until epithelial regeneration occurs—a matter of 1-4 weeks or more—even if the blood volume is immediately restored (see Bull 1953). Since nothing can be done to hasten epithelial regeneration, treatment is directed to maintaining the status quo by the regime popularly known as the Hammersmith cocktail, until re-epithelialization takes place, and the urine flow recommences (Bull et al. 1949). Tremendous diuresis may then occur and the elctrolytes lost in the dilute urine passed through the still damaged tubules must be replaced if deficiency is to be prevented. It is said that there are no sequelae if recovery occurs, although the period of follow-up is still short and some doubt has already been cast on this (Finkenstaedt et al. 1953). Candidates for higher degrees will be horrified to find that over 72 causes of acute tubular necrosis are now on record (Darmady 1953).

Pupillary abnormalities: It may be considered pedantry, but is certainly more accurate, to replace the deeply laid reflex "Argyll-Robertson pupils - tabes" with "Argyll-Robertson pupils - neurosyphilis." Horner's syndrome is a common and important "gap" with a depressingly long list of causes; the enophthalmos which, for some curious reason, usually heads its features, is rarely seen and is certainly far less important than ptosis and myosis—surely a convenient rhyme. These two usually exhaust enquiries for causes of unequal pupils. Trauma and iritis are common and both inequality and

failure to react may result. Most clinicians will have been had by the effect of homatropine instilled into one eye by an enthusiastic resident.

Fat boys and girls: Fat boys whose genitalia are engulfed in fat run serious danger of being labelled Frolich's syndrome, and fat girls with slight hypertension, Cushing's syndrome. Both syndromes are exceedingly rare. The majority of those with Frolich's syndrome have a serious lesion of their hypothalamic-pituitary system; those with Cushing's syndrome will mostly be dead within 5 years. Such serious prognosis demands careful diagnosis.

Diagnosis of thyrotoxicosis: Students are taught that the blood cholesterol is raised in myxoedema, lowered in thyrotoxicosis. The general conclusion is tbat the test is of no value in thyrotoxicosis but of considerable value in myxoedema (Fraser 1954). It seems time that this finicky test was put on the black list for thyrotoxicosis. It seems also that, despite the latest contributions of the atomic pile and the increasingly esoteric chemical investigations, the diagnosis of thyrotoxicosis is essentially a matter of clinical judgment. Experienced clinicians will rarely alter their opinions after such tests, although they may be gratified to find their diagnosis upheld. There seems to be little doubt that the radio-iodine tests are the most accurate and that they have their greatest value in those cases with predominantly cardiac manifestations (see Wayne 1954).

Two neglected symptoms: Patients rarely take their temperature even in these scientific days and *sweating* is a useful indication of fever, being especially marked in rheumatic fever, brucellosis, bacterial endocarditis, tuberculosis and Hodgkin's disease. The profuse sweat which follows rigor helps to distinguish the latter from mere shivering. Sweating is excessive in thyrotoxicosis and acromegaly, diminished in myxoedema, Addison's and Simmond's diseases. The seeker after rarities will know that profuse sweats assist the diagnosis of islet cell tumour and phaeochromocytoma.

It is well known that *nocturia* is a prominent feature of enlarged prostate but less well known that it is almost invariable in renal and cardiac failure. It has been shown that in cardiac failure the renal blood flow and urine formation increase at night (Brod and Fejfar 1950); oedema is often mobilised at night which also increases urine flow. In early renal failure, the kidneys cannot concentrate the urine to excrete all waste products by day but can still pass large volumes of dilute urine; urine formation therefore continues evenly, day and night, with passage of large quantities of urine of fixed specific gravity—osmotic diuresis (Platt 1952). In Addison's disease, too, there is loss of power to excrete a sudden load of fluid and nocturia is common.

Suppression of defence mechanisms: Cough, vomiting and diarrhoea are three physiological mechanisms for rejection of noxious substances. Therapeutic suppression of these defences is often meddlesome and may have serious consequences. Productive cough should never be suppressed except, occasionally, to procure sleep; morphine should never be used for this because sputum retention plus respiratory depression is extremely dangerous, particularly in infancy and old age and when respiration is strained to the utmost. Acute vomiting and diarrhoea caused by ingestion of toxins, chemical or bacterial, is best treated by stomach washout and purgation with castor oil, unless the patient is severely collapsed from dehydration.

"Functional," "Hysterical" and "Malingering": Improper use of these terms causes much confusion. Functional, in particular, is often used to imply either neurosis or malingering. Organic dyspepsia results from abnormal structure. Functional dyspepsia results from abnormal function (anatomical structure being normal), e.g., abnormal motility or secretion—it is a descriptive term, not a diagnosis. Neurosis, through the mediation of the autonomic nervous system, may be the cause of functional dyspepsia—the diagnosis is then neurosis. Hysteria may also form the basis of functional dyspepsia, the patient having a conscious or subconscious desire to have symptoms. All these types of dyspepsia cause suffering and all require treatment, each in a different way. The malingerer has no symptoms and does not suffer, but consciously and deliberately "puts it on" for his own ends.

References :—

Brod, J., and Fejfar, E. (1950). Quart. J. Med. 19, 187.
Bull, G. M. (1953). Communication to Royal College of Physicians.
Bull, G. M., Joekes, A. M., and Lowe, K. G. (1949). Lancet, 2, 229.
Cates, J. E., and Christie, R. V. (1951). Quart. J. Med. 20, 93.
Dahl-Iversen and Nissen (1930). Arch. f. klin. Chir. 159, 303.
Darmady, E. M. (1953). Proc. Roy. Soc. Med. 45, 844.
Finkenstaedt, J. T., O'Meara, M.P., Weller, J. M., and Merrill, J.P. (1953). J. Clin. Invest. 32, 567
Fraser, R. (1954). Brit. Med. J. 1, 696.
Friedberg, C. K. (1949). Diseases of the Heart, London, p. 102.
Glennie, J. S., Dark, J. F., and Lindaus, D. C. (1952). Brit. Med. J. 1, 1009.
Griffin, G. D. J., and Smith, L. A. (1954). J. Amer. Med. Ass. 154, 731.
Gross, D. M. B. (1929). J. Path. Bact. 32, 503.
Horder, T. (1921). Medical Notes, London.
Hughes, A. (1952). Brit. Med. J. 2, 970.
Johnston, R. N., Wilson, T. M., Ogilvie, B. M., and Rosser, T. H. L. (1954). Brit. Med. J. 1, 799.
Jones, F. A. (1947). Brit. Med. J. 2, 477.
Lewes, D. (1951). Brit. Med. J. 1, 211.
Littler, T. R., and Ellis, G. R. (1952). Brit. Med. J. 1, 842.
Lucas, P. F. (1953). St. Barts. Hosp. J. 57 and 107.
Needham, C. D., and Simpson, R. G. (1952). Quart. J Med. 21, 123.
Nicholson, H. (1953). Brit. Med. J. 1, 324 and 389.
Parkinson, J. (1949). Lancet 1, 895.
Platt, R. (1952). Brit. Med. J. 1, 1313.
Scott, R. B. (1953). Brit. Med. J. 1, 1128.
Swynnerton, B. F., and Truelove, S. C. (1952). Brit. Med. J. 1, 287.
Thompson, H. L., Oyster, J. M., Heide, J. B., and Morgan, F. M. (1946). Gastroenterology, 7, 320.
Waugh, J. M., and Cain, J. C. (1954). J. Amer. Med. Ass. 154, 734.
Wayne, E. J. (1954). Brit. Med. J. 1, 411.

ROYAL HOSPITAL OF ST. BARTHOLOMEW ANNUAL BALL

ROYAL FESTIVAL HALL

Friday, May 13th. 11 p.m.—5 a.m.

Dancing to the Curzon Orchestra

Cabaret:— "THE NIGHTLIGHTS"

Tickets and Table Reservations from the Ball Secretaries, Abernethian Room.

AN ABNORMAL FIRST RIB

by M. A. NEWTON

THE fairly common condition of "thoracic inlet syndrome" is nearly always traceable to the presence of a cervical rib, and it is therefore of interest to note a case in which abnormal development of the first rib is responsible.

Clinical Note.

Last January, a 25 year old Leading Patrolman (R.N.) was admitted to the Hospital, complaining of tingling in the left hand and forearm.

Two years previously, he had first noticed that when his arm hung at his side, he became conscious of a tingling on the medial side of his forearm and hand, and the medial two fingers. The tingling would come on after 10-15 minutes, and could be relieved by elevating the limb. He said that his father had had "some abnormality in the development of his bones."

On the left side of his neck, there was a hard, immovable swelling just behind the mid point of the clavicle, and the subclavian artery could easily be felt pulsating over this structure. The clavicle on this side had no anterior bow, but was displaced downwards and backwards in its middle portion.

The patient stood with his hands at his sides, and, after about five minutes, the left hand and forearm assumed a blue and blotchy appearance and became colder, while no change was observed on the right side. The patient noticed tingling in the affected limb after another five minutes. Both radial pulses were palpable, but when he squared his shoulders, the left one was obliterated. Subsequent elevation of the left arm restored its normal colour.

X-Ray Examination.

The skiagram (Fig. ...) shows no abnormality on the right side; but on the left, the first rib passes forward below the clavicle, and is then seen to be lacking an anterior part, by which a normal first rib would be attached to the sternum. There is no evidence of a cervical rib, and this fact was all that was reported by two radiologists.

Operation.

These observations were confirmed at operation, and the first rib was found to be connected anteriorly with the second rib by a fibrous cord. The scalenus anterior and phrenic nerve were rather more medially situated than usual. The subclavian artery and trunks of the brachial plexus were confined in a narrow gap between the abnormal rib and clavicle, and the rib was considerably grooved where the artery passed over it. The first thoracic nerve root could be felt ascending over the posterior part of the first rib.

The fibrous connection with the second rib was severed anteriorly, and, by using bone-cutting forceps on the visible part of the first rib, a large portion of it was removed. Bone-nibbling forceps removed a further portion posteriorly, until the first thoracic nerve was free, and just a small stump of the rib was left attached to the first thoracic vertebra.

Results.

The patient made a rapid and successful recovery, and was discharged five days after the operation. He had some numbness in the left thumb, which started recovering from the proximal end, until only the tip was affected when he left hospital. This was probably a result of the necessary retraction of the brachial plexus during the operation.

Commentary.

Of forty-eight cases of thoracic inlet syndrome reviewed by K. C. Eden in 1939, forty-two arose from the presence of a cervical rib. Two were due to exostoses from the first rib, and of the remaining four cases, only one was at all comparable with the case under consideration, and was not due to any gross deformity.

The case reviewed above is peculiar in that the abnormality is not restricted to the first rib, but also involves the clavicle.

Like the cervical rib conditions, however, this one may go unnoticed until its secondary effects present, when the inconvenience they produce is usually sufficient to warrant surgical treatment.

This record has been made to draw attention to the importance of scrutinizing the first and second ribs and the clavicle, as well as looking for a cervical rib, when there is evidence of pressure upon the nerves and vessels of the thoracic inlet.

Acknowledgement

Professor Sir James Paterson Ross, who treated the above case, and assisted in the production of the article.

Reference.

Eden, K.C. (1939). Brit. J. Surg. 27,111.

THE BEST LAID SCHEMES O' MICE AND MEN . . .

by **RONALD McGRIGOR**

JANUARY is not the best time for ski-touring in the High Alps, but for various reasons, not unconnected with the "exigencies of the (Health) Service," we had to plan our tour then rather than later. On the other hand if you do happen to be lucky with the weather you have these remoter parts of Europe to yourself, instead of sharing them in the Spring with numerous other parties. And perhaps the joy of being "far from the madding crowd" is not the least of the pleasures ski-touring has to offer.

My companion, also a Bart's man, was Michael Mason, and together we had planned to cross the Silvretta Alps on a four-day tour which would take us from St. Anton in Austria to Klosters in Switzerland. This range, which forms the frontier between the Arlberg district of Austria and the Swiss Grisons canton, is one of the finest Alpine ski-touring areas, and includes such peaks as Piz Buin (11,000 ft.), the Dreiländerspitze, the Augstenberg, the Fluchthorn and the Silvrettahorn. Moreover, it is one of the safest since its glaciers and their crevasses are exceptionally constant and therefore well known to local guides.

The area also possesses about half a dozen mountain huts, supported by the O.A.V. (Austrian Alpine Club) but mostly privately and locally owned, which can be used by members of the above, or other ski clubs, on tour. They are situated, more or less strategically, on an average about 4 hours trek on skis from the nearest village, and much the same distance from one another. It is worth noting, though, that the 4 hours stated in the village means in reasonable weather and snow conditions, and that in poor conditions it can take twice that time.

These huts are generally unoccupied in the early part of the winter, but can of course be used as shelter by skiers prepared to carry their own food. After mid-February most of them have a resident caretaker, who also cooks, in the shape of a local, usually retired, guide.

We had with us as our own guide Johann Bombardelli, qualified Berg- und Ski-führer, an Austrian of Italian descent personally recommended to us by a mutual friend. In addition to being an excellent mountaineering guide, Johnnie, as he soon became known to us, was stated to be a first class "crevasse-puller." Fortunately we had no opportunity of putting this latter qualification to the test, though his fine physique and obvious toughness gave one considerable confidence.

Johnny had, like many Austrian Alpine guides, served on the Russian front in the War, and though he didn't talk of it unless questioned, we gathered something of the appalling conditions in which much of that campaign was fought. We learnt, too, that in the German Army a mark of distinction was issued to soldiers who had taken part in hand-to-hand fighting with the Russians on 15 occasions. Johnny, we heard from another source, had earned 4 such badges.

Our plan was roughly as follows. We had already spent the best part of a week at St. Anton finding our ski-ing legs and getting, we hoped, fit for several arduous days in the mountains. The remainder of our holiday was to be spent in Klosters whither our respective wives were to proceed by road. Our actual starting point on skis was Galtür, reached from St. Anton by a surprisingly exciting journey of 3 hours, done in an antiquated bus at top speed, presumably in order to surmount the dangers more quickly, on a narrow and precipitous icebound mountain road. For a considerable part of the journey the dozen or so locals with whom we shared this rattletrap would jump to their feet as we skidded around each blind corner, though what good this would have done them, if the insecure-looking roadside had given way to the depths below, it was difficult to see. Being British, we made silly jokes to one another and tried to look as though we weren't worried. We did, however, decide that whatever the rigours of the journey ahead, we certainly weren't coming back that way.

At Galtür we stayed at a pleasant little inn owned by one Albert Lorenz, who on hearing of our plans promptly offered to come with us, at least to the Jamtal-hütte which he also owned. This we gratefully accepted since it meant having someone who knew the hut, how to get the stove going to warm it, and provide the many other little comforts which otherwise we weren't expecting, and of course an unoccupied hut at 8,000 ft. in mid-winter in the Alps is little more than an icebox.

With regard to our kit and equipment, a great deal of thought and planning had been expended thereon. The main problem in a trip of this sort is how to take sufficient food, spare clothing and equipment, together with other essential items in a rucksack which when full should weigh not more than 15 lbs., or approximately the weight which can be easily supported at shoulder level by an outstretched arm. This comparatively small weight is because there are times when it may be necessary to carry one's skis on one's back as well, at least a further 15 lbs. In our case we had planned to have enough food for 5 days, since it is wise to have at least one day's spare rations in hand in case of being weather-bound in a hut. The majority of huts, even when empty, have emergency food supplies, but this by general understanding is reserved for emergencies, which do not include simply feeling hungry because you didn't carry an adequate amount of food!

One must of course be reasonably self-supporting also with regard to accidents, in fact one's survival may depend on being able to get out of any difficulties one gets into—there is no other help available. One therefore plans, proceeds, and skis, with due regard to weather, snow and terrain, exercising vastly more caution than one ever does on the piste. An enforced night in the open at 8,000-10,000 ft., especially if injured, may well be fatal. Essential items of equipment include, of course, large-scale local ski maps, a compass, an aneroid barometer cum altimeter, a torch, spare tip for wooden ski, a good all-purpose pocket knife and matches. A sedative, such as Seconal gr.3, is invaluable because most people find it difficult to sleep, however tired, at unaccustomed heights; and an adequate supply of reading matter is important since there may be long periods of inactivity, particularly in poor

The Augstenberg, 10,700 ft.

weather. It should be light, in both senses of the word!

The next morning we were off by 7 a.m. All ski tours start early in the day since it is essential to plan to reach your objective with 2-3 hours in hand. You never know how badly you may need those hours. However this particular morning was fine and cold, just the right combination, and as we climbed higher into the Jamtal valley our spirits rose in proportion. The last signs of civilisation soon disappeared as we climbed on above the tree line; signs of life, too, were few—a pair of dippers flying low above the frozen stream, and some chamois high on the mountain-side above us, their only food the moss and lichen not covered by snow or ice. By midday we were in the Jamtal-hütte, where Albert promptly poured us each a stiff schnapps from what appeared to be a Winchester of the stuff. In no time there was a fire going and he had a welcome meal ready as if by magic. In the afternoon we decided to cut tracks towards the Augstenberg (10,700 ft.), a 4-5 hour climb, which we hoped to do next day, since the snow was very deep and soft and if no more fell our tracks would give us a good start on the morrow. We climbed for about 2 hours, but conditions were deteriorating rapidly, snow falling and the light failing, and not altogether reluctantly we turned and skied back to the hut in glorious deep, soft, billowy snow. Track-cutting in deep snow is hard work for the leader, so the three of us took 10-minute turns and it is amazing how long your 10 minutes in front appears compared with how short your 20 minutes behind.

That evening, by the flickering oil-lamp, we learnt much of interest from Albert and Johnnie. The Jamtal-hütte was built by Albert's grandfather, who must have been a man of considerable foresight, in 1882, and enlarged by his father in 1911. During these 73 years many thousands of walkers and climbers in summer, and more recently ski-mountaineers in winter, must have enjoyed its crude but warm hospitality. During the war it was occupied by German troops, presumably guarding the Swiss frontier, and we couldn't help thinking that it must have been regarded as a fairly "cushy" billet, remote from the fighting. It wouldn't have done of course to show too much proficiency on skis while any inspecting officers were about, for fear of being posted to a ski battalion on the Eastern front.

We looked at the hut books, too, and Michael was thrilled to find his own name entered exactly 20 years before when he first visited the hut as a schoolboy. Careful search, however, revealed the surprising fact that in spite of the large and ever increasing number of British Summer and Winter tourists who now visit the Alps, the average visiting the Jamtal-hütte was less than 5 per year. Incidentally the flowers around are said to be quite wonderful in July, by which time the snow has gone, but do not last long once the cows arrive in their summer pastures.

We slept in our clothes in bunks with a plentiful supply of blankets, which incidentally were not marked "Füsse" to tell you which end not to pull up round your neck, as in some huts. But even so we were none too warm and there was no great tendency to linger in bed.

Next day the barometer was falling sharply, the temperature had risen to barely freezing, and the visibility was poor owing to driving snow. We waited. The climb to the Augstenberg was clearly off. The next day's plan had been a 4-hour climb to the Ochsenscharte pass, and thence a short run down to the Wiesbadener-hütte, or if the going was good to climb Piz Buin first, a further 3 hours or so. Finally, probably after a night at the Wiesbadener-hütte, we would make for another pass, the Fuercla del Confin (10,000 ft), about 3 hours, and from there ski down the long wide Silvretta glacier, past the Silvretta hut near its lower end, one of the few huts in telephonic communication with the outside world, and so after a longish trek down the valley to Klosters, our long-suffering wives, and the fleshpots.

Unfortunately it wasn't to be. The weather worsened and Johnnie and Albert said nothing. You cannot press an Alpine guide to a decision, he makes it in due course, and once made you cannot change it. About 2 p.m. Johnnie gave his verdict, and how right he proved to be, though I think we had all reached the same conclusion in our minds. The recent snow and unduly high temperature spelt avalanche danger, and the falling barometer meant more to come. We had best get out, back to Galtür, before we were snowed in. Reluctantly we did so, but were glad afterwards when it snowed heavily for several days and many avalanches were occurring in the area.

The Wiesbadener Hut and Piz Buin, 11,000 ft.

Of the rest of our trip there is little to be said, the object being to get to Klosters as soon as possible. An hour on a sledge in the freezing dawn, 4 hours on skis in a blizzard to Partennen; thence by car to Bludenz, on the railway, driven by a little elderly tweedy woman in a Tyrolean hat, quite obviously the Austrian counterpart of the president of the Women's Institute in any English country village. At Bludenz we took our leave of Johnnie, very sorry not to have got us across the way we had hoped, but there was always next year as he said. Suddenly his train arrived and with several Schnapps inside him he nearly went without his rucksack. For us, Bludenz to Feldkirch by train, a half-hour drive across Liechtenstein in the dark with a little man who continually pointed out the sights we couldn't see. "That's where the landlord lives," he announced proudly as we skirted Vaduz, referring, we presumed, to the mediæval castle of the Prince of Liechtenstein! He talked so busily in fact that we were unable to tell him that his right-hand direction indicator was out, and we wondered idly whether we were the first people to cross an entire country in this way!

And so, by the skin of our teeth, we caught the last train to Klosters, weary and a little frustrated, but feeling the richer in experience for our 4 days' wanderings; and feeling, too, that we knew now just exactly what to take and how to plan for next year, the only difficulty being which of the many wonderful ski-touring areas in the Alps to explore next.

You need not be an expert skier to go ski-touring, though you should be a competent one. You must, however, be reasonably fit, you must have sound equipment, and last but not least you should choose your companions carefully. Disappointments are common, and as Michael remarked at the time, probably at least 50% of all ski tours which are planned have to be abandoned at some point or other owing to the weather. Most of them finish up instead in a night club in the nearest town, and after all that's not such a bad alternative!

THE SIMPLE LIFE

by **J. D. PARKER**

Give me the stars on a frosty night
  Give me the warming sun,
The verdant hills and the swallow's flight
  Across the vales where rivers run ;
A land divorced from sin and strife,
Give me the simple life.

Give me a field of swaying wheat
  Where the keen wind tans the skin,
A hard day's work in the summer heat
  Away from the city's din ;
Thus says the peasant to his wife :
Give me the simple life.

Nay, give me the way of leisured bliss
  Of perfumed breath and garments fine,
A soft couch and a woman's kiss —
  Of roasted flesh and flowing wine,
With opiates and orgies rife ;
Give me the simple life.

THE BRITISH STUDENT TUBERCULOSIS FOUNDATION

It is estimated that every year in Great Britain 250 students contract tuberculosis requiring sanatorium treatment. This is equivalent to two out of every thousand students, but the incidence amongst medical students is considerably higher, being about nine out of every thousand.

After the active phase of treatment for tuberculosis there follows many months of convalescence in hospital or at home. It has been recognised for many years that unless a student is able to continue his studies during the convalescent period he becomes intellectually "rusty" and often demoralised about his prospects on returning to his University. Most students find that studying on their own in the ordinary sanatorium wards, where there are patients of very mixed interests, is not only difficult, but almost impossible. Yet for the student, study is in itself the best form of occupational therapy.

In November, 1949, the main student organisations (the National Union of Students, the British Medical Students Association and the Scottish Union of Students) formed a committee to consider the establishing of a sanatorium where students in Great Britain could receive treatment, while at the same time continuing their studies assisted by visiting tutors from nearby academic centres.

In France there are several student sanatoria and "post-cure" rehabilitation units and a similar scheme was considered for this country. However, because of the demand for existing sanatorium beds it was suggested that the sanatorium phase of treatment should remain as it was, under the control of the Regional Hospital Boards. Instead it was proposed to establish a national rehabilitation centre where the convalescent student (who was sputum-negative) could be transferred when he was up and about for a few hours each day.

In 1950 an appeal was launched for money to provide such a centre and during the next two years over £20,000 was raised. In June, 1952, the British Student Tuberculosis Foundation was established, to be governed by a council consisting of two representatives from each of the following organisations:—The British Tuberculosis Association, The Joint Tuberculosis Council, The British Medical Association, The National Association for the Prevention of Tuberculosis, The National Union of Students, World University Service, The Scottish Union of Students, The British Medical Students' Association, The British Student Health Officers' Association, The Association of University Teachers, The Association of Teachers in Colleges and Departments of Education.

The aims of the Foundation, as laid down in the Trust Deed, are "to give assistance to

A student at work

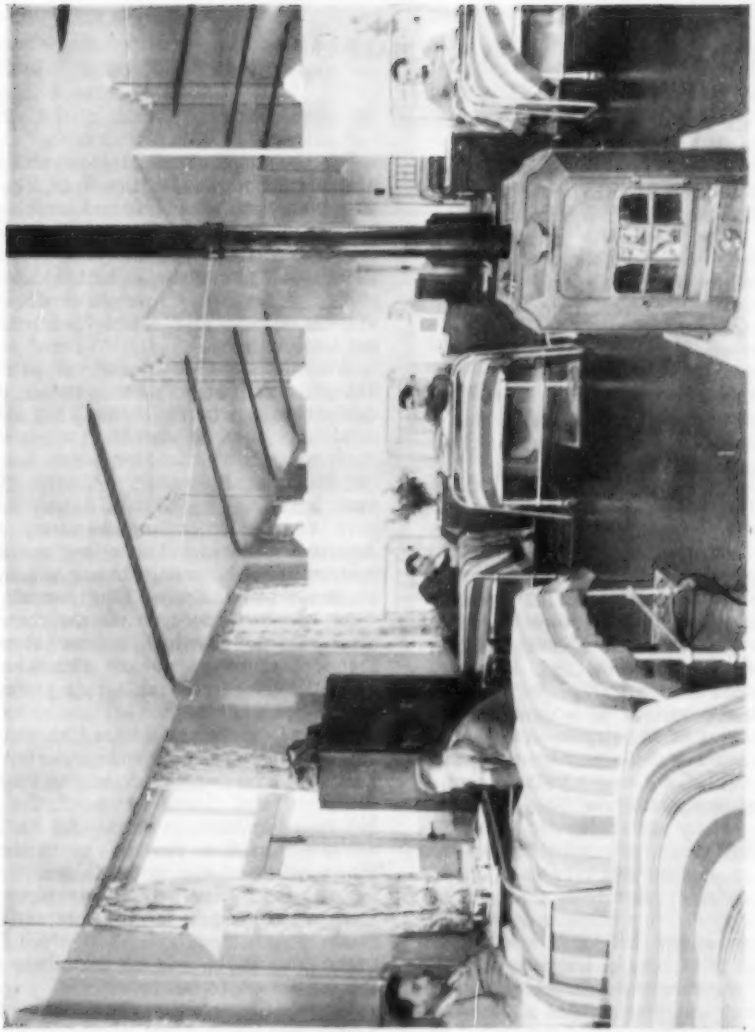
The art studio at Pinewood

any and every kind to students who are suffering from tuberculosis," and in particular "to establish sanatoria or other curative centres, wherein students may continue their studies while under medical supervision."

In September, 1952, a small rehabilitation unit was established at Pinewood Hospital at Wokingham in Berkshire, in order to offer immediate help to convalescent students pending the establishment of the main centre. The unit has sixteen beds and since then more than eighty students have been in residence, including a clinical student from Bart's who described life at Pinewood in an article in the January, 1953, issue of the *Journal*. The average length of stay at the unit is four months, although one or two students have been in residence for almost a year. Tutors from London University, Reading University and the Royal Military Academy at Sandhurst have visited Pinewood each week or fortnight, depending on the particular needs of their students. For medical students there is an excellent medical library (with many of the books donated by publishers) and thanks to the generosity of the Cambridge University Medical Society there is even a half-skeleton! In addition ward-rounds are arranged at the nearby Royal Berkshire Hospital.

It has always been the intention of the Foundation that there should be facilities for both men and women students and in November of last year a small unit for women was opened at High Wood Hospital at Brentwood in Essex, with tutorial assistance from London University.

Since the establishment of B.S.T.F. negotiations have been taking place for a permanent main centre and it is hoped that arrangements will soon be completed for the purchase of Mottingham Hall, a mansion in the grounds of Grove Park Sanatorium in south London. Mottingham Hall was built in more spacious days as the residence of the Superintendent Physician and stands in its own grounds separated by sports fields and agricultural land from the main sanatorium buildings. After conversion, approximately fifty men and women students will be accommodated and provision can be made for more residents if there is sufficient demand in future years.



Pinewood Sanatorium

It has been possible to give only a short account of the activities of the Foundation in this article, but Mr. Donald Bell, the Secretary/Administrator, will gladly supply further information about the work and plans of the British Student Tuberculosis Foundation. His address is 59, Gloucester Place, Portman Square, London W.1.

THE LIFE AND WORKS OF LOUIS PASTEUR

PART I

by J. S. MALPAS

Introduction

It is the fate of great men that posterity weaves about them a golden legend, failing to regard their lives as similar to any other story composed of error, difficulty and even tragedy. Such a legend neglects the truth which is more interesting than imagined glorious journeys through life.

For many years a legend has been growing about the person of Louis Pasteur. It is hoped in this essay that by recounting the way in which he lived through the years of "The Wonderful Century" it will be a little easier to see, despite omissions and the lapse of time, the truth of his greatness.

Louis Pasteur was born on December 27, 1822, at the town of Dôle in the Franche Comté. His father, Jean Joseph Pasteur, was a tanner who was just beginning to make a good living for his wife and daughter. Jean Joseph had returned seven years before from Napoleon's service in which he had received the cross of the Legion of Honour. In the France to which he had returned, the royalist supporters of Louis XVIII antagonised the loyal servants of the Emperor and, consequently, many old soldiers had had to take up humble tasks, to hand their swords to the local magistrate and take in return a spade or a scythe. Jean Joseph became a tanner.

Shortly afterwards in 1827 the whole family moved to Arbois, a little town lying at the foot of the Jura and surrounded by the vineyards from which it derived its wealth. Their new home was a pleasant house in the Rue de Courcelles which leads to a bridge over the river Cuisance. It was in this house that many years later Pasteur fitted out the first floor as a laboratory for his studies on the fermentation of grapes, and it was in this house also that he returned in times of holiday or tragedy in the next sixty-eight years.

For the moment everything was subordinate to the business of tanning. The hides were bought at Besançon and Jean Joseph and his son made many journeys together into that town. It was probably on those occasions that Pasteur would be told about the glories of the first Empire, and which fired a spirit of patriotism which lasted throughout his life.

Whilst his father spoke of patriotism, discipline and work, what influence did his mother have on him? Certainly her influence must have been responsible for his love of painting and literature for which his father can have had little time. A bright, intelligent, hard-working woman it was she who gave charm, order and harmony to the Arbois household. There is a remarkable portrait of her by young Pasteur which shows his precocious talent. This portrait, done when he was thirteen, marks the commencement of a period which was to extend over the next seven years. At times he quite seriously considered taking up professional portrait painting.

Pierre Bertin and Charles Chappuis were amongst his earliest friends. Bertin was a jovial scholar who was to succeed Pasteur as Professor and Sub-director of the Ecole Normale Supérieur in Paris. All his life his wit was the foil to Pasteur's seriousness, his appreciation of the good things of life a leavening of Pasteur's preoccupation with his work. His help in tasting beer and distinguishing good from bad, a feat which Pasteur found impossible, was of great help during the studies on fermentation.

Charles Chappuis on the other hand was a shy, reserved student of philosophy. He was the son of an old-fashioned provincial clergyman and inherited his father's sense of dignity and seriousness. Their close studies of philosophy linked these two together. Pasteur was very interested in art and literature and would have sympathised with the French Academician who said that "because a scientist could not spell he did

not see how that made his science any the better." Even at the close of his life Pasteur remained interested in fundamental problems and would either write to Chappuis or invite him to visit Paris.

How slowly the tempo of success mounted in Pasteur's life and from what meagre beginnings is notable.

After leaving the College at Arbois he was sent in the October of 1838 to the Institution Barbet in Paris run by an old Franc Comtois, a M. Barbet. He intended to study for the entrance examination to the Ecole Normale. This had not been with his parents' approval, it was at the urging of the principal of Arbois College that he went so far away from home.

In Paris he became very homesick. He returned home to Arbois and the following October he went to the College of Besançon not far away where he could often meet his father on the days when he came to buy the hides by the gate of the old Granvelle Chateau.

All through their letters from January 26, 1840, to August 17, 1842, there runs a constant report on his work:

> "I manage to sustain a place amongst the best in my class but I hope that my rank there will be better in a few months."

This and other evidence shows how Pasteur planned his life, this habit grew with maturity and he became expert in calculating risks and following a predetermined course of action. He certainly planned a personal life lacking in comfort and even necessities: that he maintained his health so long was probably the achievement of Madame Pasteur.

In 1842 he passed his examination for baccalauréat of sciences and mathematics and was declared admissable on August 26, fourteenth in his year. He was not satisfied with this and in the October after abandoning his place at the Ecole Normale he returned to the Institution Barbet to study hard for a year.

This time he was not homesick, for besides studying at the Lycée St. Louis he paid for part of his expenses by giving mathematics instruction to Barbet's pupils. He also went to hear the lectures at the Sorbonne.

The lectures were not only for students but were attended by fashionable people of the City. Though this tended to produce the idea in some lecturers' minds that they should amuse rather than instruct, it was probably by this means that most of scientific knowledge reached educated people in the days of few scientific periodicals and no film or radio dissemination of knowledge.

At the end of 1843 he was admitted fourth on the list to the Ecole Normale and so achieved the first of his ambitions. He continued to give lessons at the Institute Barbet, but his work took up more and more time and now he added to his own studies work that he was doing on his own account.

When Pasteur was studying at the Ecole Normale Jean Baptiste Dumas was in his late forties, a member of the Academy of Sciences and a Professor at the Sorbonne. He was eventually to be made a minister of agriculture and commerce and a Senator. He was famous as a chemist for his determination of atomic weights and the law of substitutions. He had started work as an apothecary and eventually attained the honour of becoming a member of the Academie Française. His counsel was listened to with attention by Pasteur except on one occasion when Dumas advised him not to enter the field of controversy on spontaneous generation. What a disastrous effect it might have had on the course of events if Pasteur had not chosen on this occasion to ignore Dumas' advice in view of the fact that his researches led directly to the germ theory.

Many young men owe their advancement to the timely help and advice of an established professional man and Pasteur was no exception. Jean Baptiste Biot was a hard, sceptical man, but some guide to the affection in which he held the young Pasteur is to be found in a letter to Pasteur's father on receipt of a basket of fruit from the countryman's garden. This was the only return that Joseph Pasteur could make for hospitality received at Biot's hands.

Towards the end of his life Biot gave Pasteur a portrait of himself. "If," he said, "you place that next to the portrait of your father you will be looking at two men who have loved you very much."

Pasteur was also influenced greatly by Antoine Balard. He came into contact with this exuberant southerner when he went to work as an assistant in M. Balard's laboratory. M. Balard had discovered bromine at the age of twenty-four, he had been made a member of the Academy of Sciences and was made an Inspector General of higher

Pasteur and his friend Bertin. This delightful informal picture of the two is seldom seen. Bertin became Director of the Ecole Normale after Pasteur gave up that post.

education. He was a man of many enthusiasms often more interested in seeing what was going on in other workers' laboratories than in managing his own. Pasteur said years later that nothing could be hidden from M. Balard's intelligent questioning, his ideas were given freely and were often of great value. It was Balard who suggested to Pasteur the use of the swan-neck flask which was used in the studies on spontaneous generation.

At an early phase of his career Pasteur was taught to use the microscope. The instrument in the 1840s was employed almost entirely in the Geological and Mineralogical departments of Universities. Botanists and Zoologists still relied on the simple microscope to help them produce the wonderfully detailed drawings to be seen in any book on biological subjects of that time.

After two years as assistant to Balard, Pasteur felt justified in attempting his first experimental problem. It was concerned with the crystalline structure of the tartrates, but the manner in which it attracted Pasteur is a fine demonstration of the analytical qualities of his mind.

Knowledge of molecular structure in the early part of the nineteenth century was limited. They knew molecules were formed by a grouping of quite stable atoms, the number, weight and nature of which are ordinarily well defined. For instance, they knew that:

$$Na + Cl = NaCl$$

but they did not know of what the arrangement consisted. Haüy attempted to explain it on the concept of the "integral crystal molecule," this simply means that if you have a cubic crystal of sodium chloride and go on dividing it into cubes you would at last get the integral molecule which might be a cube but not necessarily so. What the geometric form was did not matter, it was the grouping in the crystal that mattered. Thus a cube can be formed of sixty-four billiard balls or sixty-four cubes. Not only this but a billiard ball may be replaced by

a cube without disturbing the overall appearance of a cube. A chemical example of this analogy occurs in the alums.

Mitscherlich quite correctly showed that certain atoms must be very similar for substitution yields similar crystals, thus zinc, magnesium and calcium all give similar crystals when converted to the carbonate.

The concept broke down when crystals other than those having perfect geometrical shapes were considered. What happens when a cubic crystal appears but with its corners truncated? In particular what happens if hemihedral facets appear?

In quartz these hemihedral facets are inclined in one direction and sometimes in the opposite direction.

Biot made the discovery that quartz affects the plane of polarised light (that is, light whose waves vibrate along one plane) in opposite ways. The plane is twisted to the right by some crystals and to the left by others.

It was left to John Herschel the English Astronomer Royal to show that the quartz crystal with the hemihedral facet inclined to the right, rotated the plane of polarised light to the right and the crystal with the plane inclined to the left did the opposite. If the quartz crystal is melted this ability disappears. It must be noted, however, that in the case of the quartz crystal the polarised light must strike the crystal in its long axis.

Biot had shown that certain substances such as sugars and tartaric acid had no effect on polarised light when in the crystalline state, but on dissolving they immediately had an effect. The logical conclusion is that action on polarised light does not depend on crystalline structure, but on molecular structure. The effect on polarised light was different from substance to substance, not only was constitution different, but it seemed likely that the arrangement of the atoms in the molecule was different.

Pasteur now enters the story making the most fortunate choice of the tartrates for his researches. He remembered that this substance had the ability the change the plane of polarised light. His old teachers, Messrs. Provostage and Mitscherlich had studied it and indeed one of the reasons for Pasteur renewing the study was to follow step by step the procedures of these experienced scientists. He knew that there should be an hemihedral facet on the crystal and this proved to be true in all the nineteen salts he prepared.

Mitscherlich had gone on to show that a new form of tartrate found in certain wine residues had a unique property. It had the same specific gravity in solution, the same index of refraction when in equal concentration, but whereas the tartrates previously studied rotated the plane of polarised light, solutions of the new crystals did not. Mitscherlich called the new crystals para-tartrates.

Pasteur investigated various samples of these crystals. In one sample he discovered that two hemihedral facets were present. This suggested to him that the two facets had cancelled out each others effect on polarised light. However, in one sample he found that not only had the crystals no effect on polarised light, but they had only one hemihedral facet. Faced with this apparent contradiction only two courses were open, either to abandon a fruitful concept, or to conduct further researches. Pasteur chose the latter course. In a later lecture he described how he went on:

> "In spite of all that was unexpected in this result I none the less followed my idea. I separated the crystals into two groups for I had observed that they had hemihedral facets arranged in the manner of mirror images. I made them into solution and then with no less surprise than joy, I saw the right-handed hemihedral crystals turned to the right and the left-handed ones to the left of the plane of polarisation, and when I took equal weights of each kinds of crystal the mixed solution was neutral to polarised light because of the neutralisation of the two equal and opposite deviations."

The ripple of excitement, which this discovery caused, spread and eventually disturbed the not unruffled waters of the Academie. Biot and Balard were not always on good terms and it seems as if Biot could not be with Balard for very long without being rude to him. Balard that day was being even more exuberant than usual over a discovery made by a young man in his laboratory called Pasteur. Biot's only remark to Balard was, "Are you quite sure he has done what you have said?"

Biot made certain for himself. Pasteur met Biot at the College de France, a grey, cheerless building next to the Sorbonne. Here Pasteur demonstrated his discovery

from beginning to end. Biot insisted on performing the final stages himself, he made the crystals up into solution and found the effect on polarised light to be just that predicted. Biot took Pasteur's arm and said, "I have loved science so much during my life that this touches my very heart."

Shortly after making this discovery he was given an appointment as Professor of Chemistry at Strasbourg where he met his old friend Bertin who was Professor of Physics. Before he had been in Strasbourg very long he was invited to the home of the new Rector of the University, a Monsieur Laurent. There he met one of M. Laurent's daughters, a bright and attractive girl called Marie, who later became Madame Pasteur.

When Madame Pasteur died in 1910 Roux had this to say:

> "The death of Madame Pasteur saddens not only her children, relatives and friends but also those Pastoriens who know what an excellent wife she was to her renowned husband."

Stories are still told of Madame Pasteur's great sympathy and understanding. As a widow she lived in the Pasteur Institute and she never failed to enquire into the well-being of all those who worked there. Roux himself must have been one of her greatest trials for he was convinced that he had tuberculosis although this has never been proved. He lived in a little retreat over the part of the Institute devoted to chemistry and his ascetic life must have been the cause of much concern.

In so brief a summary it is impossible to describe Pasteur's discovery of internal compensation or of his journey through Europe to discover the source of racemic acid salts which won him the prize of the Pharmaceutical society for its rediscovery and synthesis.

In September, 1854, he was made Professor and Dean of the new Faculty of Sciences at Lille, and in December of the same year he gave his memorable inaugural address to students of technical science at the Faculty. This speech marks the end of a phase of Pasteur's life, no longer was he able to remain entirely in his laboratory contemplating the logical consequences of his discoveries. From now on the path of his work was to follow the solution of practical problems and the theories were to be incidental.

One day a Monsieur Bigo, who was finding difficulties in the manufacture of alcohol from beet sugar was prompted by his son to seek Pasteur's help in discovering the cause of the faulty production.

The misfortunes in manufacture of alcohol which led past the oxidation to alcohol and on to the stage of production of acetic acid had been the cause of loss of money for some time. Simply by giving the manufacturer a microscope and showing him that globules in the fermenting liquid were round when alcohol was produced and lengthened when fermentation was going wrong he solved the immediate problem. This was typical; he found the practical solution as if inspired and then followed up his results. Later in the elucidation of the diseases of silkworms he had a practical solution in twenty days, although its full investigation took him another five years. The clue is to be found in the first speech he made at Lille when he said "in the fields of observation, chance only favours the mind which is prepared."

What was known about fermentative processes that might have influenced Pasteur?

The Hon. Robert Boyle said in an essay published in 1663:

> "He that thoroughly understands the nature of ferments and fermentations, shall probably be much better able than he that ignores them to give a fair account of divers phenomena of several diseases (as well fevers as others) which will perhaps be never thoroughly understood, without an insight into the doctrine of fermentation."

Antoine Lavoisier, whose works crowded Pasteur's bookshelves, showed with the aid of the balance that "nothing could be created or destroyed." In particular he showed that a given weight of sugar in water with a little yeast underwent transformation into alcohol and carbon dioxide, the weight of the sugar being equal to that of the alcohol and carbon dioxide formed.

Gay-Lussac and Thénard evolved a method of organic analysis by which they determined exactly the molecular formula of cane sugar.

Armed with this knowledge and strong in the belief that Lavoisier was right Gay-Lussac confirmed every finding that Lavoisier had made. True, he found he had to modify his results a little. The discrepancy was admittedly only two or three per cent, but truth can be locked in smaller fractions than this as Cavendish's discovery of the

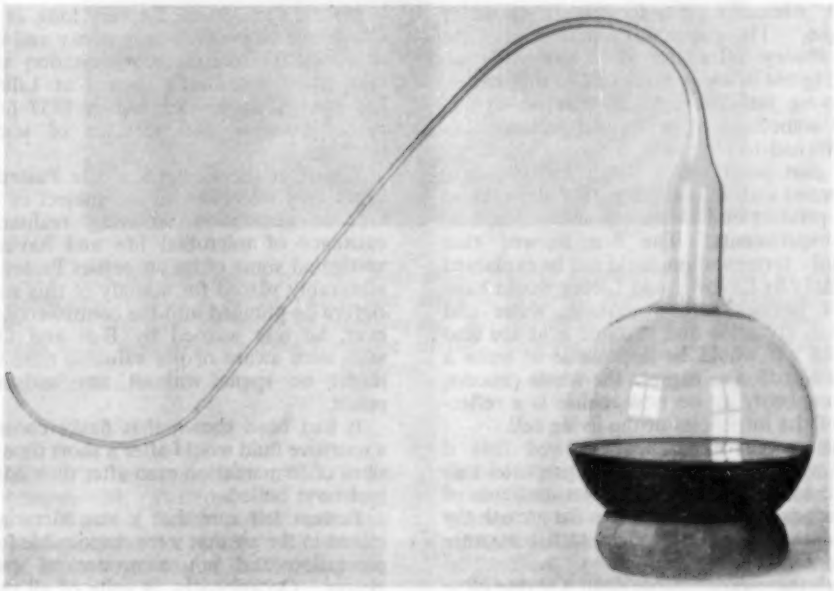
rare gases illustrates. The equation for the reaction was:

$C_{12}H_{22}O_{11} + H_2O = 4C_2H_5OH + 4CO_2$

It will be noticed that nowhere does yeast enter the equation. If yeast is so necessary for the experiment why does it disappear in its interpretation?

Gay-Lussac performed an experiment which started Pasteur thinking. Some grapes were washed and then all the air was removed from their surface by means of hydrogen. The grapes were passed to the top of a test tube containing mercury where they were crushed by means of a rod. No fermentation occurred, but if oxygen was added fermentation began not long afterwards.

Attention had immediately been focused on the oxygen in the experiment. This gas had just been found to have many properties taking part in many reactions and notably those occurring in industry. Oxygen therefore ruled much scientific thought and just as carbon and its compounds were thought later in the century to hold the very secret of life, so oxygen, the more that was known about it, the more was tacitly attributed to it. This seems a common feature of scientific activity. The conclusion of most people was that fermentation was due to oxygen. The final clearing of the scientific stage of all vitalistic phenomena was hailed by the champion of the mechanistic theory Baron Justus von Liebig with great joy. This great German organic and agricultural chemist, discoverer of chloroform and chloral, admitted that yeast was present in alcoholic fermentation but, as he so rightly said, whereas oxygen seems always to be present in processes of fermentation yeast is present in only one; that is, the production of alcohol. He went further and said that yeast was an effect of fermentation, it was the result of precipitation of albuminoid sub-



The swan necked flask used by Pasteur in his experiments on spontaneous generation. The idea was suggested by Balard.

stances by oxidation. Thus he denied any vital rôle in fermentation to yeast. Defended with vigour, the mechanistic theory of fermentation became successfully entrenched behind alcoholic fermentation.

It was necessary, therefore, that Pasteur should choose an entirely new " champ clos," namely that of Lactic acid fermentation. What the yeast in alcoholic fermentation could do, the greyish deposit in the flasks where lactic fermentation was progressing could do also. There were experimental advantages, for the débris that always accompanied the yeast was not present with the lactic acid ferment, it could be easily observed and recognised as an " organised being." Given the right conditions, it accomplished the rapid transformations over which it presided. The quotation " given the right conditions " comes from Pasteur's own notebook and in this he goes on to state that the essential oil of onion was harmful to infusoria; perhaps the first logical use of an antiseptic substance.

He brought together his ideas on the subject of lactic acid fermentation in 1857 in a paper " Memoire sur la fermentation appelée lactique." This paper was a manifesto of the germ theory. His later work was really the carrying out of ideas expressed in that paper.

Having satisfied himself that he understood something of lactic acid fermentation he returned to the study of yeast His argument that yeast was a living entity closely concerned with the production of alcohol and not a product of decomposition was based on two experiments. The first showed that alcoholic fermentation could not be explained as simply as Lavosier and Liebig would have it, for besides carbon dioxide, water and alcohol, glycerine and succinic acid are also formed. It would be impossible to write a single equation to express the whole process, its complexity as we now realise is a reflection of the intricacies of the living cell.

The second experiment showed that if yeast was put into a carefully prepared culture medium containing known amounts of the sugars and salts necessary for growth the yeast actually gained weight at the expense of the surrounding medium.

Both these experiments dealt a severe blow to Liebig's theories. With them Pasteur entered the world of the infinitely small, not a world of death and decay as Liebig believed but a world of abundant life.

This life manifested itself in many strange ways, not only could these organisms live in atmospheric oxygen but some, particularly the organisms of butyric fermentation, could live without oxygen of the air by living on oxygen bound up in the chemical molecule. Pasteur called those kinds of organisms anaerobes. It is concerning the discovery of anaerobic life that one of Pasteur's most remarkable pieces of observation and insight occurred. Whilst studying butyric acid fermentation he isolated the organism causing it, put a drop of liquid with the organism on a microscope slide, placed a coverslip over it and was surprised to find that organisms at the edges of the coverslip became non-motile, whilst those at the centre still continued their movement. Pasteur saw that this could only mean that the organisms were inhibited by oxygen. To confirm this, oxygen was bubbled through butyric fermentations; in all cases fermentation was arrested or retarded. Not only this, but he showed that a symbiosis occurs in which aerobes, living on the surface of a medium, prevent the penetration of oxygen and allow anaerobes to live beneath the surface.

He did not remain for very long at Lille. The Ecole Normale was in decay and it was urgent that vigorous reorganisation should take place. Pasteur's success at Lille had become widely known and in 1857 he was made manager and director of scientific studies.

Whilst at the Ecole Normale Pasteur became very interested in the subject of spontaneous generation. Having realised the existence of microbial life and having investigated some of its properties Pasteur was admirably placed for a study of this subject. Before he plunged into the controversy, however, he was warned by Biot and Dumas who were aware of the valuable time which might be spent without any satisfactory result.

It had been shown that flasks containing a nutritive fluid would after a short time show signs of fermentation even after their contents had been boiled.

Pasteur felt sure that it was bacteria contained in the air that were responsible for fermentation and not a mysterious creative power. Occasionally, in spite of all precautions, a flask would later show fermentation. The exponents of the theory of spontaneous generation would quote the experiment and say:

Portrait by Edelfelt the Finnish painter. This shows Pasteur examining the flasks in which the dessicated cord of a rabitic rabbit was dried in order to provide a vaccine against rabies. This was after an attack of hemiplegia. His left hand is almost useless and his arm has to be supported by a thick volume of the "Compte Rendus de l'Academie des Sciences."

'Life is a delicate thing. With your experiment M. Pasteur you clumsily destroy it except in this one instance, in this case you did not destroy the creative power by your heating of the fluids or the air."

It was to Balard that Pasteur owed the most telling demonstration in his defeat of the theory of spontaneous generation. If a flask containing fermentable material could be boiled and then left so that the liquid was open to the air and to the influence of the "creative power" then it was a crucial experiment. Balard suggested making the neck of the flask like the neck of a swan.

Surely, thought Pasteur, as day by day the flask remained clear, the "creative power" is not awaiting the removal of the swan neck before it manifests itself? If after a certain time the neck of the flask was broken the

contents commenced to ferment. This showed that the medium was still capable of supporting life. The logical conclusion was that the fermentation was caused by germs entering the flask from the air. If the air did not contain germs then it would not cause fermentation. The supporters of spontaneous generation maintained that if a flask was opened anywhere it would start to ferment.

In 1860 the famous experiments of opening flasks with aseptic precautions commenced. Flasks were opened on mountains and glaciers, in the cellars of the University, in fact, anywhere that Pasteur could go.

Meanwhile his rival Pouchet was performing similar experiments in Italy for, as he said:

> "Air is equally favourable to organic genesis, whether surcharged with detritus in the midst of our populous cities or taken from the summit of a mountain, or on the sea, where it affects extreme purity. With a cubic decimetre of air taken where you like, I affirm that you can ever produce legions of microzoa."

Both Pasteur and Pouchet obtained the results they desired. Pasteur found that few, if any, of the flasks fermented when opened on mountains and glaciers, whilst Pouchet showed that at a height greater than Pasteur had ever reached all his flasks gave rise to bacteria. These experiments received considerable publicity, and they had a great influence on Lister who was commencing his studies in anti- and asepsis. It was probably as a result of their experiments that Lister introduced the carbolic spray into his operating theatre.

Two such incompatible results provoked Pasteur to demand an enquiry by a commission appointed by the French Academy of Science. This would appear distinctly unfair to Pouchet for a little earlier in 1862 the Academy had given Pasteur the Prix d'Alhumbert for his researches which were embodied in "Memoire sur les corpuscles organises qui existent dans l'atmosphere." To give any other verdict than a decision in favour of Pasteur would have admitted that Claude Bernard and the other members who awarded the prize did not know their business. Indeed, it was this vast weight of opinion combined with an unexpected lapse in confidence by Pouchet, normally so self-assured, that won the day for Pasteur.

In fact both Pouchet and Pasteur had been entirely honest in their observations, but whereas Pasteur had used yeast juice which is easily sterilised, Pouchet had used an infusion of hay which is not. Many years later it was shown that an infusion of hay contains spores of bacillus subtilis which are extremely difficult to kill. Consequently Pouchet's flasks without exception produced alteration.

Pasteur's overwhelming victory robbed him, and the scientific world, of the knowledge of spores until ten years later, when, in attempting to confound Henry Charlton Bastian's reassertion of spontaneous generation, they were rediscovered. Truth is no function of the strength of public opinion, as the antagonists of Galileo and Harvey and, in this case, the supporters of Pasteur discovered.

Bastian, an English physiologist, published an enormous book on spontaneous generation, the whole of his argument based on the fact that urine which had been heated would remain sterile until it was made alkaline. He returned to the argument that spontaneous generation would not take place until conditions favoured the action of a mysterious creative power.

Pasteur admitted that at first he was puzzled. In this case he did not question the technique of the experiment which seemed perfect. The urine was boiled in the usual way and kept, but if potassium hydroxide was added, even in the form of a fused lump, there was a rapid commencement of fermentation.

Two factors may have contributed to Pasteur's difficulties. Firstly, too much importance was attached to airborne dissemination of germs. To give an example of this, Pasteur and Claude Bernard were asked to carry out investigations into the outbreak of cholera which was raging in the Paris hospitals. They extracted air from the wards and passed it through filter plugs. Unfortunately the debris on the plugs never gave rise to clinical cholera when injected into animals. Cholera was not recognised as a water borne infection. If water looked pure it was supposed not to contain germs and so it was that Pasteur did not notice the germs in the water with which he prepared the broth or the potash.

The second factor was that if Pasteur had been more interested in bacterial morphology he might have identified spores at a much earlier stage. He freely admitted that "the

structure of the infinitely small did not interest him."

Nevertheless the practical result was satisfactory in that it was conclusively demonstrated after much research that the addition of alkali gave opportunity for the development of spores which had not been killed by raising the temperature of the acid solution to 100° C.

If the solution was made alkaline from the beginning and if the temperature was raised to 120° C. then the experiment was entirely secure, no fermentation took place. Furthermore, Chamberland in conjunction with Pasteur showed that spores could withstand dry heat more successfully than moist heat and that it was necessary to heat rods, etc., used for transferring cultures to at least 180° C. in order to make them sterile.

Temperatures above 100° C. were achieved by heating in a pressurised container, the first autoclave used by Pasteur is still preserved at the Institute Pasteur.

His friends warned him against making long excursions from his work in order to confound his critics. However, many important discoveries resulted from these arguments which, in most cases, were fruitful. A debt is owed to Bastian for the fact that he provoked the discovery of the spore and the use of sounder bacteriological methods. The recognition of the spore and the demonstration of its properties by Koch served to advance Lister's work for it explained some of the difficulties which he met; for instance his suture material often caused sepsis and it was not until he realised that the intestine of sheep from which catgut was prepared probably contained spores, that it was thoroughly treated with carbolized oil.

This article will be concluded in the June issue.

SO TO SPEAK . . .

In Children's Out Patients :

"The patient was a Full Term Natural Delivery."

Tea Time in Casualty :

"I once had a pleural infusion." Brewing again ?

RECENT PAPERS BY BART'S MEN

*ABERCROMBIE, G. F. General practice. *Med. J. Sthwest*, 70, Oct., 1954, pp. 120-126.

*ANDREWES, C. H., (and HARISIJADES, S.). Propagation of myxoma virus in one-day old mice. *Brit. J. Exper. Path.*, 36, 1955, pp. 18-21.

AUMONIER, F. J. The application of interference contrast microscopy to the study of living muscle fibres. *J. Physiol.*, 127, 1955, 27P-28P.

BADENOCH, Alec. W. Tumours of the kidney. *Ann. roy. Coll. Surg. Engl.*, 16, March, 1955, pp. 163-174.

*BELLAIRS, RUTH. The effects of tetra-sodium 2-methyl 1:4 Napptho-hydroquinone diphosphate on early chick and amphibian embryos. *Brit. J. Cancer*, 8 Dec., 1954, pp. 685-692.

*BETT, W. R. Albert Neisser (1855-1916): "The father of the gonococcus". *Med. Press*, 233, Jan. 26, 1955, p. 87.

*——. External uses of iodine in medicine: past and present. *Pakistan Med. Assoc. J.*, 4, 1954.

*——. Gustav Riehl (1855-1943) of Riehl's melanosis. *Med. Press*, 233, Feb. 9, 1955, p. 134.

*——. Luther Emmett Holt (1855-1924): pioneer paediatrician. *Med. Press*, 233, March 9, 1955, pp. 236-237.

*——. Jean Nicolas Baron Corvisart Desmarest (1755-1821). *Med. Press*, 233, Feb. 16, 1955, p. 155.

*——. On trends in medical literature. *Missouri Med.*, 51, 1954, pp. 1016-1017.

*——. Samuel Thomas von Soemmerring. A versatile scientist. *Nurs. Mirror*, 100, Jan. 28, 1955, p. ii.

*——. The librarians role in the writing of papers by medical men. *Libri*, 3, 1954, pp. 60-63.

*——. "The Prince of beggars": Viscount Knutsford (1855-1931). *Med. Press*, 233, March 16, 1955, pp. 259-260.

*——. William Buchan (1729-1805) and his "Domestic medicine". *Nurs. Times*, Feb. 25, 1955, p. 215.

*——. William Henry Battle (1855-1936) and "Battle's incision". *Med. Press*, 233, March 2, 1955, pp. 212-213.

*——. William Sharpe (1805-96). *Chem & Drugg.*, 163, Feb. 12, 1955, pp. 170.

BORRIE, PETER. The state of the blood vessels of the face in rosacea. -I. *Brit. J. Derm.*, 67, 1955, pp. 5-8.

——. The state of the blood vessels of the face in rosacea. -II. *Brit. J. Derm.*, 67, 1955, pp. 73-75.

——. A purpuric drug eruption caused by carbromal. *Brit. med. J.*, March 12, 1955, pp. 645-646.

*BOURNE, GEOFFREY. The diagnosis and management of hypertension. *Practitioner*, 174, Feb., 1955, pp. 129-136.

*——. Effects of flying on patients with cardiovascular disease. *Brit. med. J.*, Feb. 5, 1955, pp. 310-313.

BRAITHWAITE, FENTON, (and TIBBS, D.). A case of localised arteriovenous fistulae. *Brit. J. Surg.*, 42, 1955, pp. 442-443.

*BROOKE, B. N. Cancer of the rectum. *Med. Press*, Feb. 2, 1955, pp. 95-97.

——. (COOKE, W. T., and ——). Non-specific enterocolitis. *Quart. J. Med.*, 24, 1955, pp. 1-22.

BUTCHER, P. J. A., *see* JENKINS, J. S., and ——.

*CATES, J. E., (and others). Bioassay of mineralocorticoids: relationship of structure to physiological activity. *Endocrinology*, 53, Nov., 1954, pp. 568-574.

CHRISTIE, R. V., *see* MARSHALL, R., STONE, R. W., and ——.

*CLARKE, HENRY. Hydrocalicosis. *Proc. roy. Soc. Med.*, 47, Oct., 1954, p. 884.

COLT, G. H. Aortic aneurysm. *Proc. 15th Int. Cong. Chir., Sept.*, 1953, 1954, pp. 1341-1342.

*COTES, J. E. Ventilatory capacity at altitude and its relation to mask design. *Proc. roy. Soc. B.*, 143, 1954, pp. 32-39.

*DALRYMPLE-CHAMPNEYS, *Sir* Weldon. Non-specific physiological factors controlling the phenomena of parasitism. President's address: Section of Comparative Medicine. *Proc. roy. Soc. Med.*, 48, Jan., 1955, pp. 13-20.

*DARMADY, E. M., (and others). Renal tubular failure associated with polyarteritis nodosa. *Lancet*, Feb. 19, 1955, pp. 378-383.

*DICKS, HENRY V. The predicament of the family in the modern world. *Lancet*, Feb. 5, 1955, pp. 295-297.

FLETCHER, C. M. Classification of roentgenograms in pneumoconiosis. *Arch. Ind. Health*, 11, Jan., 1955, pp. 17-28.

——. Epidemiological studies of coal miners' pneumoconiosis in Great Britain. *Arch. Ind. Health*, 11, Jan., 1955, pp. 29-41.

FRANCIS, G. E., HAWKINS, J. D., and WORMALL, A. Extravascular antibody. *Biochem. J., Proc. Biochem. Soc.*, 59, 1955, p. vii.

FRANKLIN, K. J., and WINSTONE, N. E. A review of some experimental findings of obstetrical interest. *J. Obstet. Gynaec. Brit. Emp.*, 62, 1955, pp. 29-36.

*GARROD, L. P. Chemicals versus bacteria. President's address. Section of Pathology. *Proc. roy. Soc. Med.*, 48, Jan., 1955, pp. 21-28.

GARROD, OLIVER, (WYNN, V., and ——). Spontaneous and induced water intoxication in two cases of hypopituitarism. *Brit. med. J.*, Feb. 26, 1955, pp. 505-508.

*GIBB, W. ERIC. Pericardial effusions. *Med. Press*, 233, Jan. 26, 1955, pp. 77-79.

GRAFF, JEAN A. E., (and others). Haemoglobin E in blood groups in the Veddas. *J. Physiol.*, 127, 1955, 41P

*HADFIELD, G. J., (SISSONS, H. A., and ——) The influence of cortisone on the structure and growth of bone. *J. Anat.*, 89, Jan., 1955, pp. 69-78.

*HARMER, MICHAEL H., (GREENING, W. R., and ——). Adrenalectomy in cancer of the breast and prostate. *Postgrad. med. J.*, 30, 1954, pp. 566-570.

HAWKINS, J. D., *see* FRANCIS, G. E., ——, and WORMALL, A.

HORDER, *Lord*. My most interesting case. 1. The story of the mauve lady. *Practitioner*, 174, Feb., 1955, pp. 221-222.

*HUNTER, RICHARD A., and MACALPINE, IDA. William Battie, M.D., F.R.S., *Practitioner*, 174, Feb., 1955, pp. 208-215.

*—— (and MERIVALE, W. H. H.). A case illustrating some effects of barbiturate on the glucose tolerance test. *Guy's Hosp. Rep.*, 103, 1954, pp. 375-380.

IKIN, ELIZABETH W., *see* GRAFF, JEAN A. E., and others.

*JENKINS, J. S., and BUTCHER, P. J. A. Malignant argentaffinoma with cyanosis and pulmonary stenosis. *Lancet*, Feb. 12, 1955, pp. 331-333.

JORY, NORMAN A. Acute respiratory obstruction. *Brit. med. J.*, March 26, 1955, pp. 781-782.

*KNOX, R. A., (JOINER, C. L., and others). Isoniazid and P. A. S. in chronic pulmonary tuberculosis. *Lancet*, Oct. 2, 1954, pp. 663-666.

*——, (CITRON, K. M., and ——). The uptake of thiamine by a strain of *Staphylococcus aureus* from the duodenum of a case of polyneuritis. *J. Gen. Microbiol.*, 10, June, 1954, pp. 482-490.

LACY, D. The cytology of pancreatic secretions. *J. Physiol.*, 127, 1955, pp. 26P-27P.

*LEHMANN, H., and KAY, HEDY L. A possible source of error in the estimation of haemoglobin by photoelectric methods. *Biochem. J.*, 59, 1955, p. iv.

*——, and SILK, E. Protection of rabbits against Benzoylcholine by injection of pseudocholinesterase. *Biochem. J.*, 59, 1955, p. vii.

*——, (ROBERTS, D. F., and ——). A search for abnormal haemoglobin in some southern Sudanese peoples. *Brit. med. J.*, Feb. 26, 1955, pp. 519-521.

——, *see also* GRAFF, JEAN A. E., and others.

LEVITT, W. M. Large-volume radiotherapy. *Brit. J. Radiol.*, 28, Feb., 1955, pp. 75-86.

MACALPINE, IDA, *see* HUNTER, RICHARD A., and ——.

McDONALD, D. A. An apparatus for the analysis of film records. *J. Physiol.*, 127, 1955, 25P-26P.

—— (HARKNESS, M. L. R., and others). The collagen and elastin content of the arterial wall. *J. Physiol.*, 127, 1955, 33P-34P.

*MACKENNA, R. M. B., WHEATLEY, N. R., and WORMALL, A. Squalene and other hydrocarbons in human sebum. *J. Physiol.*, 127, 1955, 36-37.

*MARSHALL, R., STONE, R. W., and CHRISTIE, R. V. The relationship of dyspnoea to respiratory effort in normal subjects, mitral stenosis and emphysema. *Clin. Sci.*, 13, 1954, pp. 625-631.

*MASON, MARK L. Mallet finger. *Lancet*, June 12, 1954, p. 1220.

*——. The management of Colles's fractures. *Med. ill.*, 8, 1954, pp. 837-842.

*——. Some observations on fractures of the head of the radius with a review of one hundred cases. *Brit. J. Surg.*, 42, Sept., 1954, pp. 123-132.

*——. Traumatic dislocation of the hip in childhood. *J. Bone Jt. Surg.*, 36B, Nov., 1954, pp. 630-632.

*MOURANT, A. E., (BARNICOT, N. A., and others). Les groupes sanguins abo, mus et Rh des Touareg de l'air. *L'Anthropologie*, 58, 1954, pp. 231-240.

——, *see also* GRAFF, JEAN A. E., and others.

*RAVEN, R. W. Surgery on octogenarians. *Brit. med. J.*, Jan. 29, 1955, pp. 266-268.

*ROBB-SMITH, A. H. T. The Rubicon: changing views on the relationship of thrombosis and blood coagulation. *Brit. med. Bull.*, 11, 1955, pp. 70-77.

ROBERTSON, D. J. Congenital arteriovenous fistulae of the extremities. *Proc. 15th Int. Cong. Chir., Sept.*, 1953. 1954, pp. 1204-1222.

ROTBLAT, J. Fifteen million volt linear accelerator for radiobiological research. *J. Physiol.*, 127, 1955, 30P.

RUSSELL, BRIAN. The history of lupus vulgaris: its recognition, nature, treatment and prevention. *Proc. roy. Soc. Med.*, 48, 1955, pp. 127-132.

*——, (and LAST, S. L.). Besnier's prurigo: observations on abnormal cutaneous and central nervous reactions. *Brit. J. Derm.*, 67, Feb., 1955, pp. 65-72.

*SARMA, VISHNU, (ABRAHAM, S., and ——). A case of spontaneous (complete) rupture of the uterus during pregnancy. *J. Indian Med. Profession*, 1, Jan., 1955, pp. 485-486.

*STALLARD, H. B. Late restoration of the anterior chamber by surgery. *Brit. J. Ophthal.*, 39, 1955, pp. 112-113.

*——. Ocular tumours. *Med. ill.*, 9, Feb., 1955, pp. 86-92.

STONE, R. W., *see* MARSHALL, R., ——, and CHRISTIE, R. V.

*STRAUSS, E. B. Die Behandlung unzulanglicher Personlichkeitstypen bei Jugendlichen. *Zeits. fur Psychother. und med. Psychol.*, 5, Jan., 1955.

*TAYLOR, GWENETH I., (HURWITZ, L. J., and ——). Poisoning by sewer gas with unusual sequelae. *Lancet*, May 29, 1954, pp. 1110-1112.

TERRY, R. B. Needle necropsy. *J. clin. Path.*, 8, 1955, pp. 38-41.

THOMAS, J. P. D., and TODD, C. A simple method of recording repeated histamine-induced bronchospasm in the anaesthetized guinea-pig. *J. Physiol.*, 127, 1955, 29P.

TODD, C., *see* THOMAS, J. P. D., and ——.

*TODD, IAN P. The role of elective surgery in diverticulitis of the colon. *Ann. roy. Coll. Surg. Engl.*, 16, Feb., 1955, pp. 118-134.

*TUPPER, R., WATTS, R. W. E., and WORMALL, A. The incorporation of ^{65}Zn in mouse mammary tumours. *Biochem. J.*, 59, 1955, p. vi.

TURNER, J. W. ALDREN. Metallic poisons and the nervous system. *Lancet*, March 26, 1955, pp. 661-663.

*VERNEY, E. B., (SELLWOOD, R. V., and ——). The effect of water and of isotonic saline administration on the renal plasma and glomerular filtrate flows in the dog, with incidental observations of the effects on these flows of compression of the carotid and renal arteries. *Phil. Trans. Roy. Soc. Lond., B*, 238, Feb. 10, 1955, pp. 361-396.

*——, (SELLWOOD, R. V., and ——). Enumeration of glomeruli in the kidney of the dog. *J. Anat.*, 89, Jan., 1955, pp. 63-68.

*VICK, REGINALD M. Progress in cancer registration. A survey of the development of a cancer records bureau from 1945 to 1954. *Brit. med. J.*, March 12, 1955, pp. 660-662.

WATTS, R. W. E., *see* TUPPER, R. L., ——, and WORMALL, A.
*WEBER, F. PARKES. A note on osteosclerotic changes due to chronic infection or neoplastic infiltration. Secondary (neoplasic) marble bones. *Lancet*, Feb. 19, 1955, p. 386.
WHEATLEY, V. R., *see* MACKENNA, R. M. B., ——, and WORMALL, A.
WINSTONE, N. E., *see* FRANKLIN, K. J., and ——.
*WITTS, L. J. A therapeutic trial of cortisone in chronic ulcerative colitis. *Acta Med. Belg.*, 17, 1954, p. 653.
*WITTS, L. J., (HEATLEY, N. G., and others). Intrinsic factor in the pyloric and duodenal secretions of the pig. *Lancet*, Sept. 18, 1954, pp. 578-580.
WOMERSLEY, J. R. Mathematical theory of oscillating flow in an elastic tube. *J. Physiol.* 127, 1955, 37P-38P.
——. Oscillatory flow in arteries: effect of radial variation in viscosity on rate of flow. *J. Physiol.*, 127, 1955, 38P-39P.
WORMALL, A., *see* FRANCIS, G. E., HAWKINS, J. D., and ——.
——, *see* MACKENNA, R. M. B., WHEATLEY, V. R., and ——.
——, *see* TUPPER, R., WATTS, R. W. E., and ——.
*Reprints received and herewith gratefully acknowledged. Please address this material to the Librarian.

EXAMINATION RESULTS

UNIVERSITY OF OXFORD

2nd B.M. EXAMINATION

HILARY TERM 1955

Pharmacology and Principles of Therapeutics

O'Sullivan, D.

General Pathology and Bacteriology

Barnes, J. M.

Forensic Medicine and Public Health

Darquier, A. F. Edwards, J. G. Ferguson, A. D.

Special and Clinical Pathology

Darquier, A. F. Edwards, J. G. Ferguson, A. D. Pearson, J. M H

THE RAHERE CHOIR

A CONCERT of music for Easter was given by the Rahere choir in the Church of St. Batholomew-the-Great on Tuesday, March 29. This was the choir's second concert since its formation last autumn; and it was to a choir much more musically poised and sure of itself that we listened.

The programme opened with a Fantasia in Four Parts by Orlando Gibbons, played on the organ by Mr. Martin Ball. It was a good performance though perhaps played a little too brilliantly for early seventeenth century music.

Next followed a group of pieces for the choir. It was in the first of these, Palestrina's O Bone Jesu, that they gave quite their best performance. They sang sensitively; and responded, it seemed almost by instinct, to their conductor's every whim.

The following item was Bach's Prelude and Fugue in C minor. This alas was not such a happy performance. Your scribe is no organist and therefore will not presume to embark upon a lengthy description of Mr. Ball's performance. Suffice it to say that the work was made to sound uninteresting and that the attention was distracted too often by the sound produced when the finger strikes the space between two notes and depresses both.

The main work was Handel's Passion. This was written about 1716 and is an earlier work than Bach's great St. Matthew Passion. The version given by the Rahere choir is an abridgement of the original to about one-quarter of its length, much of the omitted material being recitative. On the whole it is a dull work, though there are some quite exciting choruses and one really lovely soprano aria.

The soprano, Miss Sheila Mugridge, has a beautiful voice and her solo (with chorus) " Haste, ye souls " was sheer joy to listen to. The other two soloists, Mr. John Brookman and Mr. Rowland Collier, both sang well and made the most of their parts. Mr. Martin Ball obviously (and quite rightly) believes that the function of an accompanist is not merely to accompany but to add something more, and this he certainly did. The chorus was well rehearsed and sang well though perhaps we could have been treated to more fire and energy in such choruses as " Condemn to death this evil-doer " and " Keep this Man bound."

One criticism of the programme as a whole must be made. In a concert progressing from Orlando Gibbons via Palestrina, Bach, and traditional carols to Handel, was it really necessary to include such hymns as " When I survey the Wondrous Cross " and " All glory, laud and honour? " These were certainly out of context musically and the second one also in sentiment.

This, however, is a small criticism and does not detract from the main point that this was an excellent and much enjoyed concert.

J. SHAW.

BIRTHS, DEATHS AND MARRIAGES

Births

ABRAHAM.—On March 12, to Beryl, wife of Dr. Ross Abraham, a sister for Lindsay.

BAKER.—On February 25, at Kampala, Uganda, to Dr. and Mrs. Murray Baker, a daughter, a sister for Jonathan Nigel.

HANBURY.—On March 8, to Heather, wife of Dr. William Hanbury, a son.

HUNT.—On March 20, to Joan, wife of Dr. M. F. Hunt, a sister for Timothy and Christopher.

PAGE.—On March 1, to Alma, wife of Dr. Graham W. Page, a son (Nigel Graham).

ROGERS.—On March 11, to Mary, wife of Dr. David Rogers, a sister for Susan (Janet Wendy).

TAYLOR.—On March 11, to Jose and Dr. G. B. Taylor, a son.

TAYLOR.—On March 6, to Gay, wife of Gerard W. Taylor, F.R.C.S., a son (Mark), brother for Jan.

WELLS.—On March 20, to Rachel, wife of Dr. A. L. Wells, a daughter.

Engagements

DOWIE—LINDOP. The engagement is announced between Dr. L. N. Dowie and Dr. P. J. Lindop.

MUNRO-FAURE—BAMBRIDGE. The engagement is announced between Dr. A. D. Munro-Faure and Miss H. E. Bambridge.

SIMMONS—ROWBERRY. The engagement is announced between Dr. P. H. Simmons and Miss M. J. Rowberry.

Marriage

CASSON—SEMMEL. On March 5, Dr. Frederick Ronald Christopher Casson to Mrs. Luise Semmel.

Deaths

BROWN.—On February 26, Edward Vipont Brown, aged 92. Qualified 1886.

GOODCHILD.—On March 7, Nathaniel John Goodchild, aged 89. Qualified 1887.

PANK.—On March 13, Harold William Pank, aged 80. Qualified 1902.

SCOTSON.—On March 23, Frederick Hector Scotson, aged 55. Qualified 1922.

WHITEHEAD.—On February 10, Brian Whitehead. Qualified 1915.

British Society for Research on Ageing

DR. G. H. BOURNE has been elected Secretary of the Society, and PROFESSOR K. J. FRANKLIN a member of the Committee.

McGill University, Montreal

PROFESSOR R. V. CHRISTIE has been appointed Professor of Medicine, and Chairman of the Department of Medicine at the McGill University, Montreal. He has also been appointed Physician-in-Chief of the Royal Victoria Hospital, Montreal.

Polar Medal

The Queen has conferred this medal on DR. G. W. MARSH, who was base leader and medical officer at Hope Bay in 1952-53 during the Falklands Islands Dependencies Survey.

Royal Army Medical Corps

NICHOLSON. Sir J. C. Nicholson, R.A.M.C. —Territorial Efficiency Decoration, and the First Clasp to the Territorial Efficiency Decoration.

CURTIS. Major E. S. Curtiss—Territorial Efficiency Decoration.

Royal Institute of Public Health and Hygiene

LORD ADRIAN has been awarded the Harben Medal of the Institute.

Royal Society

PROFESSOR K. J. FRANKLIN has been elected F.R.S.

University of Dublin

WITTS. The honorary degree of Sc.D. is to be conferred on Professor L. J. Witts.

University of Sheffield

ROBERTSON. Mr. D. J. Robertson has been appointed part-time clinical teacher in surgery.

SPORT

RUGBY

St. Bartholomews Hospital XV—Oxford University Greyhounds. 5th February, 1955 Won : 15 pts.-13 pts.

In view of the cup replay, the Hospital were represented by a side which contained only seven of the regular first fifteen.

Under good conditions the Greyhounds kicked off and were soon leading by eight points scored in as many minutes. After this setback, the Hospital settled down and the defence remained intact until half time. It was evident after the kick off for the second half that Bart's were going to give a better account of themselves than they had done earlier on in the game. With the forwards monopolising the line-outs many promising movements took place. The game swung in the Hospital's favour when L. Thomas kicked two good penalties both from a wide angle. Tries were added by Lammiman who ran strongly on the wing, L. Thomas and Rees-Davies after a fine run from his own "twenty-five" line. In the closing seconds of the game, the Greyhounds fought back and crossed the Bart's line for a try which was converted.

Team: B. W. Badley, J. Plant, J. K. Murphy, J. Neely, D. A. Lammiman, Rees-Davies, L. Cohen, J. Dobson, I. Cochrane, B Lofts, K. E. A. Norbury, J. Creightmore, L. Thomas, M. Sleight, J. C. Mackenzie.

Bart's v. Streatham

Played at Chislehurst on March 12, 1955. Lost 6 pts.—12 pts.

Streatham proved to be one of the best all-round sides this season, and it was unfortunate for Bart's they were forced to make so many changes in their teams. Six changes were made in the pack alone, and three in the backs made necessary by a combination of injuries, duties and feeble excuses, in addition to which those players of the original team seemed to be suffering from a cup hangover.

Streatham on the other hand were extremely lively and were soon pressing strongly, although they could not pierce the Bart's defence for about 20 minutes, when they did so with an unconverted try. Bart's replied with some strong forward rushes and gained ground enough to get a penalty awarded within range of the Streatham goal. This was kicked beautifully by Laurie Thomas. About 10 minutes later Bart's were awarded a further penalty, and again Thomas found the mark. Thus at half time Bart's were leading by 6 pts.—3 pts.

After the resumption Streatham gained complete ascendancy through the superior weight of their scrum, and Bart's spent almost the entire half defending their line, they were continually denied possession in the tight scrum, heeling only about eight times throughout the match. Only really first class defensive work by the backs as a whole kept the score down, in addition to which Badley struck form almost as good as his match in the second game with St. Thomas's Hospital. It was inevitable, however, that Streatham should break through and this they did in the shape of 2 tries and a penalty goal.

Beardwell and Rees-Davies, the former having played most of the season in the "B" team, deserve special mention for the able and courageous way they handled a most unenviable task.

Team: B. W. Badley, D. A. Lammiman, J. Neely, J. Plant, J. K. Murphy, R. Rees-Davies, C. Beardwell, D. W. Downham, F. I. Macadam, J. Dobson, J. S. T. Tallack, M. Sleight, L. Thomas, M. A. N. Graham, H. Thomas.

Bart's v Harlequin Wanderers

Played at Chislehurst on March 26, 1955. Result : Won 11 pts.—8 pts.

Bart's lost the toss and kicked off uphill into a strong wind. As might be expected under these circumstances "Quins" were

soon pressing, and Bart's found it extremely difficult to get out of their own half.

After about 20 minutes' play Grimsdell kicked a superb penalty goal, followed 8 minutes later by a converted try which ended the scoring in this half as far as Harlequins were concerned. Bart's fought back strongly and Phillips dribbled over half the length of the field to touch down for an unconverted try. Half time: Bart's 3 pts., Harlequin Wanderers 8 pts.

In the second half fortunes were completely reversed and it was Bart's who did most of the attacking. They completely outpushed the "Quins" in the set scrums and the backs were constantly on the attack within their opponents' "25." Scott-Brown had two shots at a penalty goal, the first being just wide of the posts and the second being a first class effort straight through the middle.

Bart's came back even more strongly from the kicks off, and from a set scrum Murphy gave a magnificent return pass to Scott-Brown who tore through the "Quins'" defence to score a try near the posts which he converted.

Bart's continued to press until time, and looked as if they would continue to score many more points if the game continued.

Team: W. Walton, D. A. Lammiman, J. K. Murphy, R. M. Phillips, J. Plant, G. Scott-Brown, C. Beardwell, D. W. Downham, F. I. Macadam, B. Lofts, J. S. T. Tallack (Capt.), E. F. D. Gawne, P. D. Mulcahy, S. R. Costley, J. C. Mackenzie.

"A" XV Hospital Cup

Played at Leytonstone on March 9, 1955.
Bart's v London Hospital
Lost 0 pts.—11 pts.

The "A" team were considerably weakened for their match with London through injuries and the calls previously made upon its members by the 1st XV in previous cup games. They did make a creditable effort, however, in conditions which made good rugby almost impossible The ground was soaked with water, and an icy wind blew fiercely down the pitch from one end to the other. It was into this wind that Bart's kicked off, soon to be penned in their own half by the persistent long touch kicks of the London. They hung on gallantly until near half time, when London gained a penalty goal kicked from near the half-way line. It still looked, however, as if Bart's would win if they could only hold on until half time. It was unfortunate, however, that their opponents gained a try before the whistle.

Soon after the resumption it became clear that London were going to fight hard to keep their lead and Bart's could not finish well enough to cross the line. About 20 minutes from time play became confined to the middle of the field, and London, virtually in their last attack of the match, crossed near the posts for a converted try.

After this Bart's did all the attacking but could not cross the line. Outstanding for Bart's this day were Howard Thomas, who made many efforts to get the Bart's attack going, and Rees-Davies, who played his usual excellent game.

Team: W. Walton, J. Williams, J. Plant, M. Mackitt, J. Laurent, R. Rees-Davies, C. Beardwell, B. Burbidge, W. M. M. Jewell, D. W. Downham, K. E. A. Norbury, J. Creightmore, P. D. Mulcahy, M. Sleight (Capt.), M. Thomas.

Rugby Awards

The Students Union Committee have approved the awards of honours to the following players:—

J. K. Murphy, G. Scott-Brown, M. A. H. Graham, D. W. Roche, J. S. T. Tallack, D. A. Lammiman, L. Cohen.

The Rugby Club committee have awarded colours to the following players:—

J. Benedikz, J. Cochrane, D. W. Downham, R. Rees-Davies, W. H. M. Jewell, B. Lofts, J. C. Mackenzie, J. Neely, K. E. A. Norbury, J. Plant, M. Sleight, L. Thomas.

Colours for season 1954-55 were re-awarded to:—

B. W. Badley, L. Cohen, J. Dobson, E. F. D. Gawne, M. A. H. Graham, D. A. Lammiman, F. I. Macadam, J. K. Murphy, R. M. Phillips, D. W. Roche, G. Scott-Brown, J. S T. Tallack.

Medical Mystery

Next to the weather we British like to discuss our health; or anyl ow our ill-health. I don't suppose this is a uniquely Br'tish, or even a particularly modern, custom. It was followed in a big way, for instance, in ancient Bal·ylon, where the sick were always carried straight to the market place so that any passer-by who had had a similar complaint could stop and give adv ice. Encouraging as it must have been fc the sick man to swap symptoms with those who had had his disease and survived it, he may have experienced some awkward moments. What happened, for instance, when two or three of his advisers fell out about the diagnosis? He could not call in a medical referee, because there were no doctors in Babylon at the time; perhaps the amateur competition had been too keen for them. Fortunately the British medical profession is tougher; we can take .....

Space doesn't permit us to print the rest of this delightful medical essay—which appeared originally in The Times. *But you can enjoy all of it—and half-a-dozen others from the same gifted pen—by asking for a copy of "The Prosings of Podalirius". Send a p.c. to the address below.*

VITAMINS LIMITED

DEPT. (o.1)

Upper Mall, London, W.6

Makers of

BEMAX VITAVEL SYRUP VITASPRIN

BECOVITE BEFORTISS PREGNAVITE COMPLEVITE

PERTILOL CREAM CHOLINVEL ETC.

SAILING CLUB

The Sailing Club Regatta will be held at Burnham on Crouch on Wednesday, Thursday and Friday, May 25, 26 and 27. The Dean has very kindly excused those wanting to participate from lectures and classes. Sailing is not a spectator sport, so everyone will have ample opportunity to try their hand at the art of small boat handling.

BOAT CLUB

Head of the River Race, 1955

There was a somewhat unfortunate misunderstanding over the entry of the crew, which finally had to row as Molesey III, but with Bart's colours. Several of the club's better oarsmen were not available, and it was a relatively light and inexperienced crew which represented the hospital (and Molesey). Evening rowing is not possible in February and March, but the crew trained hard in the times available.

The race was rowed in the best of conditions. Bart's started as No. 105. It was perhaps a pity that the crew was never troubled by boats behind; by the finish one VIII had been overtaken and another caught up. The time taken for the course was 21 mins. 23 secs., and the final position of the crew on the river was 97th. This is 59 places higher than the Bart's crew last year, but there is still ample room for further improvement.

RUGBY CLUB—Results Season 1954-55

P	W	D	L	Points For	Points Against
29	13	5	11	219	200

				Points		
			Result	For	Against	
1954						
September						
Wed.	22	Berks. Wanderers	Won	18	0	Away
Sat.	25	Stroud	Lost	6	15	Away
October						
Sat.	2	U.S. Chatham	Won	19	14	Home
Sat.	9	Woodford	Won	11	9	Away
Wed.	13	H.A.C.	Postponed			Away
Sat.	16	R.M.A. Sandhurst	Lost	0	6	Home
Wed.	20	Cambridge LX Club	Lost	0	15	Home
Sat.	23	Old Whitgiftians	Won	24	6	Home
Sat.	30	Sutton	Lost	3	8	Away
November						
Sat.	6	Penzance and Newlyn	Won	11	8	Away
Mon.	8	Devonport Services	Lost	0	6	Away
Wed.	10	Paignton	Drawn	3	3	Away
Sat.	13	Rugby	Lost	8	16	Away
Sat.	20	Old Alleynians	Drawn	6	6	Home
Sat.	27	Metropolitan Police	Lost	3	8	Home
December						
Sat.	4	Esher	Won	6	3	Home
Sat.	11	Saracens	Cancelled			Away
Sat.	18	Old Cranleighans	Won	6	0	Away
1955						
January						
Sat.	1	Civil Service	Lost	9	10	Away
Sat.	8	Old Rutlishians	Lost	6	8	Home
Sat.	15	Taunton	Cancelled			Away
Wed.	19	London University	Cancelled			Away
Sat.	22	Catford Bridge	Won	6	0	Away
Sat.	29	O.M.T.	Won	11	3	Home
February						
Tues.	1	Kings College Hospital (Cup 1st Round) ...	Drawn	3	3	Richmond
Sat.	5	Oxford U. Greyhounds ...	Won	15	13	Away
Wed.	9	Kings College Hospital (Cup Replay) ...	Won	13	3	Richmond
Sat.	12	Old Paulines	Won	9	8	Home
Tues.	15	St. Thomas's Hospital (Cup 2nd Round)	Drawn	0	0	Richmond
Sat.	19	Old Millhillians	Cancelled			Away
Sat.	26	Nottingham	Cancelled			Home
Mon.	28	St. Thomas's Hospital (Cup Replay)	Drawn	3	3	Richmond
March						
Fri.	4	St. Thomas's Hospital (Cup Replay)	Lost	3	6	Richmond
Sat.	5	Old Haberdashers	Cancelled			Away
Sat.	12	Streatham	Lost	6	12	Home
Sat.		Aldershot Services	Cancelled			Away
Sat.	26	Harlequin Wanderers	Won	11	8	Home

Comment

This is believed to be the first season for twenty years in which the Club have won more matches than they have lost.

BOOK REVIEWS

Principles of Biochemistry, by A. White, P. Handler, E. L. Smith and D. Stetten, Jnr. McGraw-Hill Book Co. Inc., New York, Toronto and London, 1954, 1,117 pp. Illustrated. Price $15.00.

This book is described as an integrated presentation of the fundamentals of biochemistry, and "an introduction to biochemistry for medical students and others who are concerned primarily with mammalian biochemistry." The suggestion that 1,066 pages of text are required to provide medical students with a mere introduction to biochemistry will probably surprise many teachers of the subject.

Scientific textbooks appear to grow steadily larger and more expensive, and this is understandable in view of the increasing amount of scientific knowledge which is becoming available. However, the temptation to include a large amount of detail should be strenuously avoided by authors who write for the ordinary or average student. The danger that present-day students will be overwhelmed with a mass of scientific detail which they cannot appreciate, and certainly will not remember, is very real.

Biochemistry undoubtedly plays a very important role in modern developments in medical science, and with the rapidly advancing front it is highly desirable that up-to-date accounts of the biochemistry of normal and abnormal body processes should be available. For this reason, and since it provides a valuable exposition of biochemistry approached with a special emphasis on medical applications, this new book will be welcomed by teachers and postgraduate students in biochemistry, and by those reading for a science degree in this subject or in physiology. It is to this group of individuals rather than to medical students in this country that this book will appeal and will prove extremely helpful, but the high price will undoubtedly militate against its widespread use in Great Britain.

It covers most aspects of biochemistry, and useful lists of suitable reference books, reviews, articles and journal articles are given. It is rather surprising, however, that valuable review articles in the *Biochemical Society Symposia* are not listed.

The team effort of the four authors of this book deserves high commendation, but more drastic pruning in places would have improved the book. For example, does the medical student (or even his teacher) require to know the precise chemical rearrangements which glucose undergoes in alkaline solution, the step-wise degradation of glucose to arabinose, or the special methods of separating and identifying steroids? It would also have been more helpful if the textual cross-references had given page instead of chapter numbers.

A major criticism concerns the Index. It is inevitable that a book weighing 3¼ lb. is more likely to be used for reference than for general reading, and many readers will undoubtedly experience considerable difficulty in deciding which of the whole string of page numbers given in the Index will lead to the required answer. For example, the reader who wants to know what happens to fructose in the body will find 13 page references under fructose metabolism, and even if he has the necessary patience to turn up all these pages he is still left with no clear picture of what happens to this important sugar after its absorption into the body.

A. WORMALL.

Artificial Respiration by T. O. Garland, M.A., M.D., D.P.H. Faber. 60 pp. 6s. 6d.

This book gives an interesting and instructive account of Artificial Respiration. It deals first with the Physiology, principles and History of the subject. There are descriptions of various methods, with more detailed accounts of the Holger Nielsen and Eve's rocking method, all illustrated with clear photographs. A summary of the experimental comparison of the methods gives the tidal air and arterial oxygen saturation of the unconscious, and the oxygen utilisation of the resuscitator. Finally the author describes suitable means to employ in particular situations where the standard methods are not practicable.

B. T.

An Introduction to Medical Laboratory Technology by Baker, F., J. et al. Butterworth. 330 pp. 30s.

The primary aim of this work is to provide a text-book covering the syllabus for the Intermediate Examination of the Institute of Medical Laboratory Technology. In the space of just over 300 pages the authors

have set out to provide general and in some cases detailed information for the laboratory worker in all branches of routine pathology. They are to be congratulated on the amount of useful information provided. The text is attractively presented, and the diagrams clearly represented. In addition a most useful appendix is provided which includes general hints as well as details of buffer solutions, saturated solutions, and stain solubility.

It is likely that this text will be constantly used as a bench book in most laboratories, and will be one of wide appeal. It is suggested that the book might also be of use to medical students, and that is so to a limited extent. In a general book of this kind one question of balance is always a difficult one, and will depend largely on personal preferences. This work is generally well balanced though occasional portions are sketchy, and one feels that such an important subject as blood-grouping needs more than three-quarters of a page, and might well have been aided by a diagram. Small details such as this need not detract from a work to which the authors have obviously given care, and on which they deserve much congratulation.

G. J. CUNNINGHAM.

THE WORLD'S GREATEST BOOKSHOP

FOYLES
FOR BOOKS

Bookbuyers throughout the world turn to this bookshop as a knowledgeable source of information on all their book requirements. And from generation to generation they praise and recommend Foyles — and buy their books here.

Foyles have departments for Gramophone Records, Stationery, Music, Handicraft Tools and Materials, Magazine Subscriptions, Lending Library, Foreign Stamps.

119-125, CHARING CROSS ROAD, LONDON, W.C.2.
Gerrard 5660 (16 lines) • Open 9—6 (inc. Sats.)
Two minutes from Tottenham Court Road Station

CASSELL MEDICAL BOOKS

PEARCE GOULD'S
ELEMENTS OF SURGICAL DIAGNOSIS
Tenth Edition revised by Sir Cecil Wakeley, K.B.E., C.B., L.L.D., M.Ch., D.Sc., F.R.C.S., F.A.C.S.

An indispensable textbook describing clearly and in great detail the main principles of diagnosis and their application to surgical disorders of the various anatomical regions: owing to extensive revisions the text has been almost entirely rewritten.

Tenth Edition. 594 pages. Illustrated. **18s. 6d. net.**

DISEASES OF THE EYE
by EUGENE WOLFF, M.B., B.S., F.R.C.S.

In addition to discussing diseases and their treatment, the author includes chapters on ophthalmoscopy, eye complications of general diseases, operations, bandaging and medicinal applications to the eye. The section on the retinopathies has been very largely rewritten. New illustrations have been added.

Fourth Edition. 236 pages. Illustrated. **30s. net.**

37/38, St. Andrew's Hill, London, E.C.4

BAILLIÈRE MEDICAL BOOKS

MILLER AND ELLENBOGEN'S THERAPEUTIC INDEX
by C. M. Miller, M.D., M.R.C.P. and B. K. Ellenbogen, M.D., M.R.C.P. Pp. 160. Postage 1s. 12s. 6d.

STEDMAN'S MEDICAL DICTIONARY
18th edition edited by N. B. Taylor, M.D., F.R.S.C., F.R.C.S.E., F.R.C.P. and A. E. Taylor *D.S.O.*, M.A. Pp. xliv 1561, 46 coloured plates, 622 other illustrations. Postage 2s. 63s.

BIGGER'S BACTERIOLOGY
th edition by J. W. Bigger, M.D., SC.D., F.R.C.P.I., D.P.H. Pp. xii 548, 113 illustrations. Postage 1s. 3d. 20s.

TREDGOLD'S MANUAL OF PSYCHOLOGICAL MEDICINE
3rd edition by A. F. Tredgold M.D., F.R.C.P., F.R.S.E., and R. F. Tredgold, M.A., M.D., D.P.M. Pp. xii 328. Postage 1s. 25s.

ROSE AND CARLESS' MANUAL OF SURGERY
18th edition edited by Sir Cecil Wakeley, BT., *K.B.E., C.B.*, LL.D., M.Ch., D.SC., F.R.C.S., F.R.S.E., F.R.S.A., F.A.C.S., F.R.A.C.S. 2 vols. Pp. xii 746, viii 725, 18 colour plates, 1007 illustrations. Postage 2s. 63s. the set.

BUCHANAN'S ANATOMY
8th edition edited by F. Wood Jones D.SC., M.SC., M.B., B.S., F.R.S., F.R.C.S. Pp. viii 1616. 847 illustrations. Postage 1s. 9d. 45s.

A book on every subject for every student

STUDENTS' AIDS SERIES

Recent new editions include

Anæsthesia.	*3rd Edn.*	8s. 6d.
Bacteriology.	*8th Edn.*	10s. 6d.
Clinical Pathology	*2nd Edn.*	10s. 6d.
Dermatology.	*4th Edn.*	8s. 6d.
Diseases of Children	*8th Edn.*	8s. 6d.
Gynæcology.	*11th Edn.*	8s. 6d.
Physiology	*4th Edn.*	8s. 6d.
Medical Treatment.	*3rd Edn.*	12s. 6d.
Public Health.	*7th Edn.*	8s. 6d.
Surgery.	*8th Edn.*	10s. 6d.
Surgical Anatomy	*4th Edn.*	8s. 6d.
Surgical Diagnosis.	*3rd Edn.*	8s. 6d.

Postage 6d. on each volume

For a complete list of the forty-eight volumes in this Series, and a comprehensive catalogue of standard works, write to our Sales Department.

BAILLIÈRE, TINDALL AND COX
7 & 8, Henrietta Street, London, W.C.2

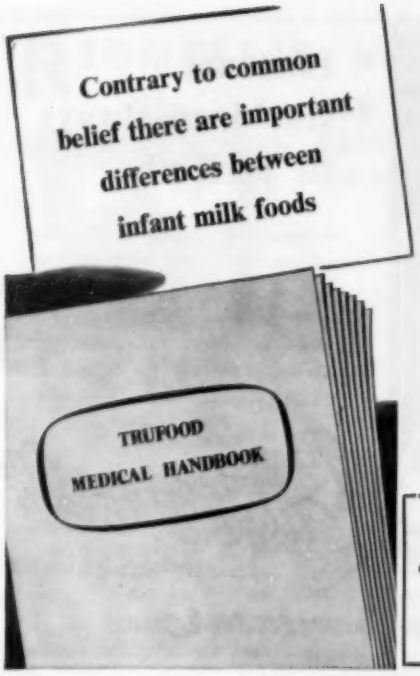
INSURANCE

TELEPHONE

WHItehall6161 where there is an efficient organisation ready to deal with all your enquiries

CAR & GENERAL

INSURANCE CORPORATION LTD.
83 PALL MALL, LONDON, S.W.1



Practical details of the range of Trufood milks are given in the

TRUFOOD MEDICAL HANDBOOK

This Trufood Handbook for the Medical Profession, a convenient, pocket-size publication, gives analyses, characteristics and feeding tables for all Trufood products for infant feeding. There is also a section of tables and general data on obstetric and pædiatric subjects for quick reference. A free copy of this book will be sent to any doctor or student on receipt of the coupon below.

To Trufood Professional Information Service, Green Bank, London, E.1. Please send me a copy of your Medical Handbook.

Name .....

Address .....

.....

.....

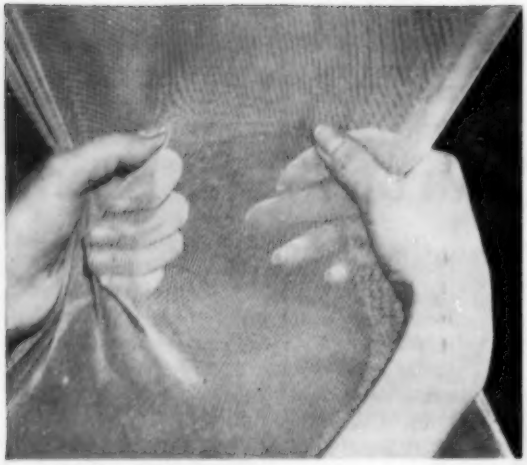
TFD 79-150-100

At the Westminster Bank they always remember that your requirements, however small, are important to *you*. They give efficient and friendly service to everybody without regard to the size of the account—and that's another reason why . . .

You ***should bank with the*** **Westminster**

CHEAPSIDE BRANCH: 162 CHEAPSIDE, E.C.2

Westminster Bank Limited



Lastonet stockings always fit perfectly

Lastonet surgical stockings are always made to the patient's measurements to ensure a perfect fit. The light-weight net is self-ventilating and stretches in all directions to afford even support over the whole affected area of the limb. Each stocking is guaranteed for six months.

* *Can be prescribed under the National Health Scheme. Measurement forms, full details and particulars of medical opinion will be sent on request.*

LASTONET PRODUCTS LTD., CARN BREA, REDRUTH, CORNWALL

Lastonet

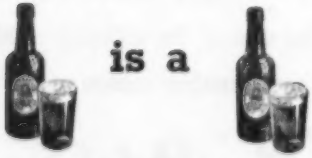
ELASTIC NET STOCKING

Always made to measure

Φ10

The best

of the light ales



is a WHITBREAD

Vita-Weat

is ripe whole-wheat goodness

It's the special 'nutty' flavour of ripe, whole wheat that makes Vita-Weat so delicious. Convalescent patients enjoy it, and as an important constituent of many balanced diets, it is nourishing and digestible. Enquiries will be welcomed from the Medical Profession interested in the dietetic qualities of Vita-Weat.

PEEK FREAN & COMPANY LTD., LONDON, S.E. 16

RIDDELL'S ALL BRITISH INHALERS

ARE UNSURPASSED FOR BRONCHITIS, HAYFEVER, ASTHMA OR FOR PENICILLIN ADMINISTRATION.

AND THE POPULAR—

RIDDOBRON

ASTHMA INHALANT

The PNEUMOSTAT Electric Inhaler illustrated supplies sufficient atomised medicament for one or two patients at a time while a special model is available for up to six patients simultaneously.

Ten hand and electric INHALERS are available for Home, Office, Clinic or Hospital use.

An illustrated coloured brochure of inhalants and inhalers suitable for all respiratory complaints will be sent free on request.

• RIDDELL PRODUCTS LIMITED •

"THE LEADING HOUSE FOR INHALATION THERAPY"

RIDDELL HOUSE, DUNBRIDGE STREET, LONDON, E.2.

Telephone: BISHOPSGATE 0843 (3 lines) - - *Telegrams:* PNEUMOSTAT, BETH, LONDON

DIETS FOR RESEARCH ANIMALS

The makers of Blue Cross Animal Feeding Stuffs supply most of the leading British medical schools and research stations and many American Organisations with specially formulated diets for rats, mice, rabbits, guinea pigs, and other animals kept for research. The diets are scientifically prepared from freshly-milled ingredients, in the Mills of Joseph Rank Ltd., and Associated Companies.

Enquiries are invited from other medical schools, research centres and laboratories

BLUE•CROSS

Balanced Rations

By Appointment
Joseph Rank Ltd. Manufacturers of Animal Feeding Stuffs to the late King George VI

JOSEPH RANK LTD., MILLCRAT HOUSE, EASTCHEAP, LONDON, E.C.3. Telephone: MINCING LANE, 3911

ADVANTAGES Longer duration of action—24 hours. Exceptionally well tolerated. Inexpensive. Tasteless.
OTHER INDICATIONS Allergic asthma, urticaria, angioneurotic œdema, allergic dermatoses, pruritis, allergic conditions of the eye, travel sickness, nausea and vomiting of pregnancy.

DOSAGE *in Hay Fever and other allergic conditions.* One or two tablets at night for one week followed by one tablet daily if required.
In travel sickness one or two tablets one hour before commencement of journey. Thereafter one tablet daily if journey is of more than 24 hours duration. Children half this dosage.

'ANCOLAN'
TRADE MARK

Scored tablets each containing 25 mg. meclozine dihydrochloride
Basic N.H.S. Prices: Bottles of 25 tablets 3/8 and 250 at 32/6

Literature and specimen packings are available on request

THE BRITISH DRUG HOUSES LTD. (Medical Department) LONDON N.I

And/M.651

Printed by The Enoma Press Ltd., 255/7 Liverpool Rd., N.1.